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Vocabulary of the Scindee Language. By CAPT. J. B. EASTWICK, Assistant Political Agent, Upper Scinde. From the Political Secretariat of the Government of India.

It is some months ago since we were favoured by the Government of India with the copious Vocabulary which forms the subject of the present article; and it would have earlier been sent to press had we not placed it in the hands of our learned associate Dr. Haerberlin, from whom we hoped to have obtained some philological remarks upon this curious dialect, which seems to form the link between the languages of Western India, and those to the North-West and West of it. In this hope we have however unfortunately been disappointed, Dr. Haerberlin's ill health obliging him to quit Calcutta for a time; and political events rendering the publication of the Vocabulary now of urgency, we have therefore lost no time in obtaining the MSS. from the hands of Dr. Haerberlin's agent, and hurrying it through the press. We should also state, in justice to Captain Eastwick's invaluable labours, that in the MSS. each Scindee word is also written down in the native character;* but having no fount of types of this, we have been compelled to omit what would otherwise have rendered it so much more complete. As it now stands, however, it is a noble foundation for a complete Dictionary of the language, and with Mr. Wathen's Grammar of the Scinde Language, of which a notice will be found at p. 347, vol. VI. of our Journal, and Lieut. Leech's Epitome of the Brahooi and Baloochi Languages, is another monument of those patient labours by which Englishmen have so honorably aided to build up and to consolidate the influence and power of their country in the East, while they advance the cause of civilization and the interests of humanity —H. P.

* Apparently a mixture of Guzerattee, Tamul, and Malayalam (?) on a conjectured Marwari, says Mr. Jas. Prinsep

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Abandon, to	chha diyan	choran.	Account	lekho, hisab	khande.	Along, with	gad, san	
Abandoned	sunco	(jan sung	Accuse, to	daira bandhan		Alloakance	seedho, wiran	
Advice, to	martabocahce wi-		Accusation	zila, f. pachar, m		Already	hane	
Abate, to	khutan		Accuse	khatto		Also	whee	nit.
Abhorrence	ghat karan	ghin	Acquainted, to be	sunvanan	mahit thiyan.	Always	sada	dhun, f.
Ability	kirb		Across	hoona bhar	adr, par.	Ambition		
	sagh }		Action	halat kam		Among	wich, men	
	was }		Active	bhar	janjro.	And	oun, biyo	
Able, to be	seghan		Accustom, to	heran		Angry	damat, k'war	
Abode	tukans		Accomplish, to	nibahan		Another	biyo	
Abolish, to	badkaran		Aid, to	jumlo karan		Answer	waranee, javab	
Abortion	bharkaran		Adhere, to	chumbran	chahontan.	Ant	makoro, ulace	
About	wejho		Adept	ustad	jim.	Any	jeko	sojro.
	chondares }	khanhar.	Adjoin, to	gaddi thiyan		Antimony	surma	
Above	te		Adulteress	lach, char		Arm	bauh	
	mathe		Adult	baligh		Army	lashkar, katak	bhan, m.
Broad	bahar		Adultery	zina	mat, f.	Arrogance	jaro	
Abress	pohree	kiro.	Advice	gantee, salah		Arch	sarah	jas.
Absence	na, achan	wej.	Advise, to	salah diyan	ach, han.	Appeal, to	sujan	
			Afoot	peun, piyado		Architect	od, rajho	
Abstemious	satewan		Afraud	dryun	aggin.	Arrange, to	sulharan, thahan	ruth.
	pahrez		After	pon		Arrangement	sola	
Absurd	beja gailh		Afternoon	poarry		Aliigator	wago	
			Again	poimoti, waree		Almond	badam	
Abundant	g'ano		Age	jamar wahi		Apple	soot	
Abuse	gar		Agent	whairwaree	lanah.	Apperient	julab	
Abution	maso		Agreement	wado	siyo.	Arrive, to	ponchan	rasan.
Accept	sakaan		Ague	thaud		Arrow	kan, teer	gaz.
	many an		Aid, to	hath rakhan		As	kach, h	
Accident	ochto		Air	wa		Armpt	jijen	ich, hayi.
Acclivity	charee		All	sabhe nure		Ashes	rakh	chitayan
Accompany, to	gadjee halan		Alone	heklo		Apprise, to	chitayan	janaya.
Accomplish	hamahee		Alike	jibo, jero		Assafetida	hing	
Accord, with one	gadjee		Alimony	day				

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Ask, to	puchhan, goran		Bale	bhujko	gandre.	Beard	daree	sunlauree.
Asleep	sumeo, suto		Ball	gorce		Beater	kabar	
Ass	gadho, koten		Bamboo	bans		Best	muru	[chango
Assistance	madad, wah		Ballot or Sub- scription	pukha, pattee	{ dharo, chando.	Beautiful	change khon	sutro.
Assembly	mayhis		Bamboozle, to	ghusayan		Beauteous	sohno	[wan
At leisure	palo		Baudage	pattee paho		Become, to	hinakare	thi pa-
Attendant	khaskhaalee		Baneful	with		Bed	hand, sejband	
Awake	jago		Banyan	wanyo		Bee	makhee, jundan	
Aware, to be	chetan		Banish, to	paides karan		Beef	goommah	
Avance	loth		Bank	biar, kande		Beetle nut	japhar	
Away	jufu. [piyo.		Bankrupt	dewalo		Bazar	bazaar	
Away with him	khorio, khar-		Bar	clak		Before	age, agle	penar nau-
Away, far	hayo.		Barber	hajam, naee		Beggar	lungo	
Aunt, maternal	parr, agahun		Bare	uqharo, oqar		Begin, to	lagan	
Aunt, paternal	masee, mamee		Bargain	uhol, shait	oqar.	Behind	puthiyan, pote	
Abstain, to	phuphee, chachee.		Bark	chodo		Belch	ogariyee [han	
And	wat rakhn		Barley	jau		Believe, to	munyan, wisa-	
Area	muru, goro		Barren	kabrateen	pachhar.	Bell	ghaid, ghuru,	
	angan		Base	kameeno	pajee.	Bellow, to	ramban kuran	
Babe	bar, balak		Bashful	kameeno		Bellows	dawan	
Back	puti		Basket	sharmido	dallo.	Belly	peth	
Backwards	puthiyan		Bason	kharee, chhabo		Beloved	pirin	hot.
Bad	buch bro		Bastard	chilamchee		Below	heth	
Baffle, to	namumed karan		Bathe, to	wenjan	shuan karan.	Bhalayee	bhalayee	
Bag	gothree, boro		Bat	chamro		Beneficent	subago	[chango het.
Bag for horses	tobro		Beal	dano		Benevolence	change	khon
Baggage	madee		Beak	chumbh	[ran. Best.	Be	hod	
Bait	jamun		Bend, to	nurayan	dingee ka-	Be	pare	
Bait, to	jatto layan		Be, to	thujan, huwan		Beyond	rowan	
Bajree	bajar		Beam	shahier	kam.	Bewail, to	knabardar	
Ba, once	tarazu, kanto		Beau	matar	[sahan	Beware	sufio, pitto	sawon panee.
Balcony	bathak		Bear	nich, h (to bear)		Bele	hundee	tip.
Bald	gaujo		Bear, to (a child)	wi aman		Bill		

English	Dialect of Sar	Dialect of Lar.	English	Dialect of Sar.	Dialect of Lar.	English	Dialect of Sar.	Dialect of Lar.
Bird	bandan		Bottle	shisho, bhuttee		Bottle	shisho, bhuttee	
Bird's nest	pkani, pakhru		Bottom	'taro		Bullock	bullock, w ta mead to (without the meat) tabo	
Bit	akehu		Box	'sing, kaman		Bullock-bag	khurju	
Bitch	tukka, zab		Boat	'wahan		Bunch	sujo	[grapes]
Bite	kuttee		Boatman	daug		Bury, to	gandree	bharee
Bite, to	chak, pavun		Boatman	petee, qab'ee	(sneefbox,)	Burn, to	phatan	dan.
Black	kezo		Boatman	mark	laharee,	Burnt, to	phatan	baran, kha-
Blacksmith	lohar	[salo]	Boatman	mark	laharee,	Business	kam, kay	dando.
Blade	phai	[salo]	Boatman	mark	laharee,	But	chajj	(achan
Blanket	chumb	[salo]	Boatman	mark	laharee,	Butcher	par (for archers)	(akhar
Blanket	khatto, jor		Boatman	mark	laharee,	Butter	kasee	buttermilk.
Blind	auda, kaho		Boatman	mark	laharee,	Button	makhan	
Blood	jat, chate		Boatman	mark	laharee,	Buy, to	beerre	(tan.
Blood	rat		Boatman	mark	laharee,	By	ghuan, mulwa-	
Blow	thibba		Boatman	mark	laharee,	Blessing	asis, f.	
Blow	chuto		Boatman	mark	laharee,	Brushwood	belo	
Board	pharano, par		Boatman	mark	laharee,			
Boat	berce, bhance		Boatman	mark	laharee,			
Boat	angee, kuta		Boatman	mark	laharee,			
Body	ling		Boatman	mark	laharee,			
Body	ubhman		Boatman	mark	laharee,			
Bolt, to	wejo		Boatman	mark	laharee,			
Blue	hadlo		Boatman	mark	laharee,			
Blue	hadlo		Boatman	mark	laharee,			
Bone	hujjat		Boatman	mark	laharee,			
Bond	pothee, kitab		Boatman	mark	laharee,			
Book	sal karan, toon-		Boatman	mark	laharee,			
Bore, to	roong		Boatman	mark	laharee,			
Borrowed	rakat		Boatman	mark	laharee,			
Brown	urulo		Boatman	mark	laharee,			
Both	bavee		Boatman	mark	laharee,			

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Cluster of grapes	chugo, (of dates)		Covetous			Cut		
Color	rang	waran.	Cow	lobhee		Cubit	chuto	
Corn	phanee		Coward	gaun		Cucumber	batha	
Come, to	achan, rason	rasan.	Crack	chur	khadro.	Conceited, to be	badiang	
Companion	sathee	sangtee.	Cradle	pingo		Cup of brass or	likan	
Complaint	danh		Craft	kasb	kirt.	metal		pyallo.
Complete	puro		Cramp	wakar		Curdled milk	katoro, watto	
Compliments	salam		Crean	thar	kunj.	Curtain of a bride	doro	
Consent, to	mauyan	basan.	Create, to	khalikan		Dagger	kattee	
Conversation	galhayen	charcho.	Credit	khalik		Daily	dinh-dinh	
Consideration	wichar		Creek	nang		Dance, to	naehan	
Company at a marriage	ah jhanj		Creep, to	petabhar wanyan		Dancing girl	kanjaree	
Counterfeit	wes (m)		Cross	bauee, baree		Damp	jalo	
Contract	wando	muddo.	Crow	tikko, tund		Dare, to	taufik thyan	
Cook, to	randan	joran.	Crowd	kay	[mer]	Dash, to	oochhlan	
Copper	tramon		Cruel	nelo, (of troops)		Dark	andharo, oondae	
Coppersmith	thantharo		Crumb	bbor	katu	Daub, to	meian	
Copulate, to	jahan		Crumble, to	nahtan		Date of month	muttee	
Copy	utaro		Cry, to	kukan		Date (fruit)	kark (tree) katal	
Correct	theek	suddo, kharo	Cry, to	kuk	ruan.	Daughter	dhee, niyaneg	
Corse	mundo	marh.	Cry	gagan	hakal,	Daughter-in-law	noh	
Cottage	landee	chungo.	Cultivate, to	wulf, roomee		Dawn	dhootree	pirat.
Cotton	kapah		Cultivation	pokhan		Day	pirbhat, asur	
Cover	dhakun	ralee, sawar	Curbed	pokh		Dazzling	dinh, pween,	
Cough, to	dhakun	butan.	Curbion	dudh, dhoro		Dean	(after-tomorrow)	
Count, to	khangun		Curse	gaddee		Deaf	chamkando	parchaeen.
Country	ganun	lekhan.	Custom	parato	bhundo	Dear in price	boro	
Court	bun	deh.	Cure	dastoor, parwez		Dear, beloved	malango	
Courage	kacharee	dumkhan.	Curf	chhuto		Debt	pirin, pyaree	supurn.
Covenant	sautr	hiwan.	Curious	choona, lon-a		Debtur	udharo, karz	
	koul		Cut, to	seer		Decent	karzee	
				sukree		Deceive, to	makar, fareb	ghat, dhoko.
				wadan, kapon			droh dewan	

English.	Dialect of Lar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Decision	nibeto		Distribute, to	wirahan		Early	sawe, dhakee	pirbatee.
Decay, to	winyayan		Dishonor	bramance	karayer	Ear	kan.	
Defeat	blajan		Dress of honor	pahrayan		Earring	boondro, bilero,	lurko.
Defeat, to	blajayan		Drink, to	piyan		Earth	mittee	
Defile	soree wat	lak.	Drunk	pargano		East	obar	obrando, sa-
Deer	haran, kotapacha		Distance	dur, pund	wecho	Easy	sukho	sahaujo, sa-
Den	ghar, belo		Dive, to	tubbee diyan		Ebb and flow	war charhanoun	(kho.
Dense	gatto		Ditch	rand	guman.	Eddy	lahan	
Despise	thaitho	charcho.	Drum	khahre		Edge	ken	
Deep	far		Drunken	dhoh		Egg	mouh	
Delay	chirk	awel, gisar.	Do, to	mast		Eggs	ano	
Depart, to	ladan	usaa, ladan.	Doctor	karan	wad	Elbow	ark	thunth
Devil	shatan	daat.	Dog	fabeeb, wad		Elk	goin	
Devout	khudaye watatesan		Doubt	kutto		Elephant	bathee	
Deny, to	mukran	'alan.	Door	ma, mata	dar.	Embezzle, to	khace wanyan	
Dew	matr	mak.	Drop	darwajo	bitto.	Empty	sakhuo	thall.
Due	puro		Double	binu	chhandlo,	Embrace	bhakur	
Decrease, to	gatan		Drop, to	tepo, churako	chuwan	End	matho	siro, ant.
Devote, to	ghoran		Dry	triman		Envy	ishk	ghiran.
Deficient	kaso, gat		Dyer	sukho		Enter, to	pahan	
Definite	msunk		Dye, to (the beard)	khatee		Enemy	weree	
Deserted	sunyo		Dye, to (the beard)	kes layan (cloth)		Enchantment	jhar, kaman	
Detail	wichur, wigt		Doze, to	rangayan		Enough	ghano, bas	jajo.
Die, to	maran		Draw, to	chakee thyan	oqhran.	Enquire, to	golan	
Difference	pher		Dough	chukan	ghlan.	Epilepsy	inaree	
Difficult	aukho	aulo, kathan	Dung (of a horse)	atto, goto		Entrails	gre	
Dig, to	khofran		Dung (of a cow)	cheynu		Emerald	panno	upatan.
Dirt	gap, mittie	dasan.	Dewlap	phupher		Eradicate	patan	
Direct, to	sirnamo	(Dalbergia sisu)	(Dalbergia sisu)			Erase, to	khofran	
Disgusted, to be	nakhooch fhyian	or sheesham tree	or sheesham tree	salee	sinjee.	Estimate, to	kathan	
Dish	dhanku, thalee		Each	hekro		Evening	saujee	
Dismount, to	lahan		Eagle	ukab		Ever	kadhin	hed
Distress	chabb	mbat				Every	jeko	

• The Sissor — Zi

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Evidence	shahid		Form	pukn	khēt	First	pehu	
Examine, to	parkhān		Farmer	rahak		First	muk	
Exchange, to	matun		Fast (swift)	takro, rogo (ceasing from food)		Fire, to set	bahukhaban	
Excuse	bahano, gusayan		Fastening	silar		Fire, to set	bah diyan	
Exceed, to	wadan		Fat	thullo		Fireplace	chul	
Exchange, in	para	paran.	Fatness	charbee		Fish	trund	
Exercise	dand, istimal	dakh, hro.	Fatal	halakee		Fish, kind of	machnee	
Except	warkee	dharan.	Fate	kemat		Fish, kind of	pallo dumbro	
Exhaust, to	khalee karan		Father	baboo, piya		Fit, to	clak	thabar
Expense	kh.harch		Father-in-law	soho		Fit	sakon	
Extinguish, to	njuman	wisahan.	Father, grand	nano, dado		Flat	khushamat	
Eye	gheteo, dumbree		Father, grand	doh, bhul		Flattery	wayee	
Eunuch	hijro	khrojo.	Fault	hakka paran	chuk.	Flatulent	ming	wan.
Eye	ak		Fault, to	dij bhau	dap.	Flax	moongan	
Eye-brow	lharan		Fear	orjhan		Flax	moongan	
Eye-lash	pimbree		Fear, to	langan		Flee	bhaybhan	
Eye-ball	wanee	taro.	Fertile	kuwatwaree		Fleece	bhendjee, khal	
Equal	surto, fedo		Fertile	kh.hambh		Flesh	gosh	madh.
Expended, to be	khayan		Few	kh.rayan		Flexible	kuaree	
Expending prayers	somanee		Few, to	khushce	ryh.	Play, to	kh.layan	
Earring	pango		Felicity	mahee		Plant	pahnree	
Ear of corn	sang		Feminine	gaado	kanoo.	Plant	taran	patia
Face	manh		Feminine	sap	kanoo.	Plant	adnan	
Face, to	kamano thyan		Feminine	anyeer	kanoo.	Plant	ich.hat	
Fall, to	moalake ha		Feminine	ucho	kanoo.	Plant	arto	
Faint	por chan		Feminine	akhar	net.	Plant	wadnan	
False	hano, besakh		Feminine, to be	etheran	chakur. su.	Plant	hag bhano	
Fallow	kur	judo.	Fight	juero, jang		Plant	wal, phool	
Family	wisance		Fight, to	wran		Plant	gajer, gat	gag
Famine	kurun	kotuna	Fill, to	bharan		Plant	wiran	
Famine	dukud	kal. avaran.	Fill, to	milan, labnan.		Plant	khayan, khay	
Faith	uwar, deer		Find, to	augur		Plant	agato, agamo	
Far	pare, ardhun		Find, to	pur		Plant	wash	
Farm	nabhar		Finger	pur		Plant	teleman	
Farm			Fire	pur		Plant	khoro	

English.	Dialect of Sar	Dialect of Lat.	English.	Dialect of Sar.	Dialect of Lat.	English.	Dialect of Sar.	Dialect of Lat.
Foot	pat, chareo		Grandfather	ladio, nano		Green	sawon, sai	
Foot	per		Grandmother	ladec, nanee		Greens	sag	
Foot of bed	pangatee	perandee.	Grandson	dhaitr		Griet	dukh	gunlar.
Forbidden, to	jalan	rokan.	Grandaughter	dhaitree		Grind, to	pihan	
Force	jor		Gratis	muit		Grinding mill	janro,	
Foundation	jar		Grateful	mamnun		Groom	sas	
Fragrant	changee boo		Ginger	sunt		Grow, to	utharan	usran.
Free	ajo, wando	niveklo.	Grinle	patko		Grocer	pansarre	
Free	tazo	tatto	Girth	tiyan	boch, hau.	Griuel	rib, bhat	
Frown	gondoe		Glad	suraho	nihal	Guana	gob, kirdce	rab.
Friend	sendo		Glove	shisho, ahree	kach.	Groin	naro	
Fruit	mewo	maitr.	Glassware	adastano		Grown	sas	
Fuel	kattee		Glove	tapan		Guan	nabo	khattoo
For	lai	katnee.	Glow, to	wanyan, balan	usan.	Guard	choukee	
For	paraho	parawo.	Go, to	chhelo, lakree		Guglet	dillo	dillee.
Foreign	kapar	nur.	Goat	dhante, allah		Gun	ambuk top	banduck.
Forehead	wisan	bhulan.	Gold	son		Gunpowder	darun	barut
Forget, to	ch, hadan		Good	'hang'o, mocharo		Gunde	subun	satee agwan.
Fort	karree	ket.	Goodness	changayee		Gues	atkal	
Fortify, to	bhag		Gran	chano, ann	kana.	Guest	menman	
Fortune	kukur		Glittering	chumkando [nee		Grunt, to	rambha karan	
Fowl	lonbhar		Glue	laee, saras, kham-		Habit	her	jhonto.
Fox	makar		Gond	sonaro	gond, beer	Hair	war, chotee	
Fraud	drijayan		Goldsmit	rat san bharro		Half	adh	{honkan.
Frighten, to	alar		Gory	bhando		Hammer	bathearee	to hammer,
Fringe	bhunyan		Granary	chano		Hand	hath, chanibu	kar.
Fry, to	bhareo		Grape	drakh	dakh.	Handful	muth	lap.
Full	rand		Gourd	tumbo		Handle of sword	kardiyo	
Footsteps	janda		Grass	gah		Handle of door	sohno	'karo.
Flag	juwa		Grave	hadro, bhu'tee	masea.	Hang to, by the	hang to, by the	sutro.
Gambing	bagh		Grazed, to, v. n.	charan charan, v. a		Hang up, to	phaho diyan	
Garden	bagay'o	arayeen.	Great	waddo			tangan	
Gardener	thun		Greasiness	sanh				
Garlic								

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Happy	suraho		Holy	ghar	sunhanro.
Harbour	bandar		Hone	makhee	
Hatchet	tabar kuharo		Honey	abroo, nam	[ab. ignorant
Hard	dado	nund.	Honor	khur	naug, naums,
Hare	seher	saho.	Hoof of an ass	sumbh	khushree.
Hart to the taste	kasaro		Hoof of a horse	singh	
Hat	topee		Horn	ghuro	
Hatred	wer		Horse	jule	
Head	matho, seesee		Horse cloth	nal	
Headman	pagaro		Horse shoe	koso	
Head of a	mukhee		Hot	gharee	
tract	aundo		Hour	ghar	tatto.
Headlong	khair	khairo khin.	House	kyen	
Health	chango, bhalo	nimuro.	How	kedo	
Healthy	dhig	dher.	How big	ketro	
Heap	bundan	suman.	How many	alan	
Hear, to	man, chit	andra, hod.	Humidity	bhukh	
Hear	taw, garmee	tapash.	Hunger	bhukho	
Heat	gauro	nuro.	Hungry	kubr	
Heavy	wesuro	hur.	Humpbacked	kubo, thuwo	
Headless	waddare	obhar.	Hump	shikar karan	
Height	wecharo		Hunt, to	shikar wanyan	
Helpless	ithan		Hunting, to go	murs	
Hence	edr	ure.	Husband	kurmee	kand.
Here	ghanar	gawant.	Husbandman	mich	karee.
Herdman	naugo		Hint	gareo	
Hermit	hidkee		Hint	sonah sauj	
Hiccup	likayan		Hallstones	khuree	
Hide, to	takkar	chhappar.	Horse furniture	pharo	
Highland	kardiyo	dungar.	of gold	jaho	
Hill	suar		Heel		
Hilt	sakho	polo, thallo.	Hogdeer		
Hog			Hedgehog		
Hollow					awn.

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Jaw	keyaree		Labour	pohriyo, mehnat		Lemon	limun	
Jawaree stalk.			Labourer	mazor		Lend, to	udharo dewan	
chopped for cattle	kutar		Lad	fasut	lasiyar.	Length	wekran	
Jawaree	jawar		Ladder	charnee, dakan	pawnree.	Leptrosy	kor	
Jerk, to	irken banan		Lady	beebee, dero		Letter	purzo, khat	chitthee.
Jewel	jawahir		Lamb	gheto jo bacho		Level	sawon	
Jeweller	jariyo		Lame	mando	langro.	Lesson	sabak	
Jest	gabo		Lame of a hand	fonto	rundo.	Lewd	lucho	
Joke	charcho, thattho		Lamp	diyo		Liar	kurbo	
Journey	safar		Land paying a 3d to Govt.	batayee		Liberality	sakharat	jod.
Juice	ras		Land	sukko	[motr.	Libertine	khoblo	lerpiyo.
Jot	tir, kakh	jaro.	Landholder	jameendar	bboyon, jba.	Lick, to	chatan	
Jump, to	trapan	kudan.	Lamentation		dad.	Lid	dhakan	
Justice	nean, wichar	achar.	Lane	gullee	ghattee.	Lie	kur	
Inundation	bod, let	char.	Language	boleee		Life	jee, sh, janam	paran.
Infidel	babar, kafir		Last, to	tikan	rahan.	Lift, to	khanan	ubhiyaran.
Keep, to	rakhan, sambaran		Last year	parsal		Light	hallo	
Key	kunjee	chabee.	Laugh, to	killan		Light, not dark	sojo	
Kick, to	lat hanan		Lazy	thaduo, sust	postee.	Light, to	barat	
Kid	bulwan	kelro.	Lease	maswar		Lightning	vijj	khewan.
Kill, to	maran	kulan.	Lead	siho		Like	jehro	
Kin	mayitree	siya.	Lead, to	mouhmen wanyan		Lame	chuno, gaj	seeree.
Kinsman	saggo, mitr		Leaf	pan, pauno		Lane	liko	
Kindle, to	baran		Lean	dubro, hino	patro.	Lining	astar	
King	padshah		Learn, to	sikan		Limb	ling	
Kiss, to	chuman		Leather	cham		Little	thoro, nando	
Knapsack	bujko		Leave	mokal		Little man	mandro	dimbro.
Knee	muno	ghutno.	Leave, to	ch, hadan		Lion	sinh	
Knife	chako	kap.	Leave, to food	obaran		Lip	chap	
Knob	gandh	har.	Leech	ghour	jonk.	Living	ghero	jyado.
Know, to	janan	pururan.	Left, (not right)	khabo	(with thigh)	Live, to	jivan	
Kidney	bugee		Leg, (foot only)	per	tang, jhang	Load	bar	jaro.
Kite, (of paper)	patang (the bird)		Leisure	palayee	wandayee.	Lock	kulf, jendro	
						Long	ldhiggo	

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Look, to	disean		Master	dhane, ago		Money		paiso, roko
Loose, to	chhoran	upatan.	Mat	nukh, torce	parch.	Monday		sumar
Loss, to	winyayan		Metal of a gun	palito	toro.	Moon		chhandr
Lose	khot, ghat		Mean	kamino	inch.	Moon light		chhandiko
Louse	jun		Meaning	morad	arth.	Month		mahino
Love	piyar, mahabat	nih	Measure, to	mayan	kach, han.	More		waddo
Low	athnan		Measure of grain	kaso	kach, hno.	Morning		subhaee
Low	pajee, nich		Medicine	darun	dawa, dabh.	Morsel		tukkar
Locust	makar		Meet, to	gadjan		Mosque		masit
Lover	ashik [iron]		Melon	gidro, hindano	chchain.	Mother		maee
Ladle of wood	doee, kafgeer, (of		Melt, to, in water	garan		Motion		lodo
Lobe of the ear	papree		Melt in fire	pighran		Mouse		kuwo
Liver	jeru		Memory	sud	sar, surt.	Mound		thallo.
Leg	pinee		Mendicant	jogee	kapri.	Mouth		wat
Ladle for ghee	kanchhee		Merely	irugo, fakt		Mouth of river		gatto
Lynx	phakaree		Message	neyapo		Mouthful		giah
Lizard of the Gu-			Messenger	pandee		Much		ghano, bisear
ana kind	goh	a dog)	Middle	wich		Mud		gap, garo
Mad	chareo, chitto (as		Midnight	adh rat		Mule		khachar
Maid	kunwanree	joran.	Milk	kheer, khareo,		Murder		khoon
Make, to	karan		Milk and water	kheer, (sour)		Musk		khasturee
Male	nar		Mind	biya		Musket		banduk
Mallet	watahro		Mine	khotr, khan		Musical		kanjar
Man	maru, murs		Minute	pul		Mustard		ahur
Mango	amb		Misery	suylon, shum		Mistress		mahboob
Malice	khundrah		Mirror	larsee, aino	sos.	Mortar, gun		ookhadee
Many	ghano, gach	jajo.	Misfortune	nibhag		Mother of wife		sas
Maier	ith		Mistake	bhul, chuk		Mother-in-law		ma matrijee
Nare	ghoree, madiyan		Mistness	gadayan		Mole		tir
Nishanee	bazar		Mix, to	dauro	dhundh.	Milt (or spleen)		tree
Mark	whan, parnun		Mixed, to be		wichhuran.	Mustachios		mucha
Marriage	parniyan		Monastery		tikano.	Mongoose		nor
Marry, to						Mana, (a bird)		kabar

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Nail, finger	nob, mekh, of iron		Oath	son, sakpak		Owl		chib, chibro
Naked	ugharo		Obligation	thoro	kan.	Own		panjo
Name	naw, nalo		Obvious	padro		Overcome, to be		haran
Narrow	soro	odo.	Occupation		uddim.	Obliterate, to		drayan
Near	wejo, wat		Ocean	samundr		Other, on		ludro
Necessary	gurjnee		Of his own accord	panhen		Pain		surpr
Necessary, it is	gurje	kand, guto.	Often	ghana dinh		Painful		dukhee
Neck	geechee		Oil	tel	telee.	Paint, to		rangan
Necklace	har	nikkar.	Oilman	chakee		Painting		chitr
Need	gurjnee		Ointment	malam	poro.	Painter		
Needle	sui		Old	kuraro		Palanquin		kamangar.
Neelgaye	rooj	parosee.	On account of	babat		Palm	palkee [hand]	
Neighbour	parecho		Once	hekar		Palm	khajee, tiree, (of	
Neighbourhood	paro		One	hekro		Palace	marce	
Nephew (brother's)	bhatryo, bhanjo,		Onion	basar		Pan	kanabee, tawon	
Nephew (brother's)	bhatryo, bhanjo,		Only	hekle	ukhelan.	Pair	joro	
Net	(son) bharo [(sister's)	hod na.	Open, to	patan	mat.	Paper	kagar	
Never	kadhee na	hod na.	Opinion	deeyan		Parrot	chattu	
New	nawo, koro	hod na.	Opium	afeem		Pattern	namuno	
News	sama	samachar.	Opposite	waro	takro.	Pay	mahino	
Niece	bhatree bharjee		Opportunity	gamen		Pay, to	paiso dhyan	darmaho.
Night	rat		Oppression	julm	ander.	Parentage	gharano	chukayan.
No	na, nahee	hulla.	Order	parwano	hukm.	Passage-boat	pattan	
Noise	kuk, bakhero		Orphan	chhotaro		Pawn	gaho	
None	ko nahee	ba pahr.	Ornament	gahnah	manceeb.	Pawn-broker	mahajan	
Noon	mauj-and		Other	gyo		Peace	suth	parchayo.
Nonsense	jakh		Origin	bekh, par	mur, murho	Pease	matar	
Nonsense, to talk	jakh, maran		Originally	bekhee	murgo.	Peacock	mor	
North	uttar		Otherwise	nikar		Peaben		del.
Nose	nak		Oven	tanoor		Pearl,	imotee	
Note	chithree, ruko		Over	par	uthayan.	Peculiar	miro	nisaro.
Nourish, to	nipayan	hinamund.	Overturn, to	lelayan		Peg	kir	
Now	hane		Outparts	bahraree	chhandis.	Pen	kalam	lekhee.
Numbering	gantee		Outside	bahar		People	lok, maru	
Nutmeg	jaepphar							

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Pepper	merch	miriyun.	Plough	har	katal.	Push, to	ghelan, rerhan	thelan.
Period	je, kadhen	tano. [mana,	Poison	weh		Push, to	ghelan, rerhan	thabo.
Perhaps	mekal	mala, shal,	Police office	chaburo	ujaran.	Fut, to	ghelan, rerhan	payan
Permitted	hainan	murhal.	Polish, to	ghontan		Prickly heat	rakhan	
Perplexity	maru		Polisher of guns	wujar	dhoro.	Penitence	araye	
Person		jano.	Pond	dhband, dubbo		Partridge	gisee	
Personable	daado	disnun	Pony	thakar	doddo	Pathless	titar	
Pestle for bang	arzee	madree, for	Poor	yabu, tattu	nimano, we-	awatar	aj	samar.
Petition	patro	[grain, &c.	Pound, to	kangal	[charo.			
Pick up, to	chundan	ghaghee.	Powder	kuttan	nitaran.	Pity	journey	
Pickle	achar	[ground	Pour, to	buro	sagh.	Provision for a	kodar	
Piece of cloth	lako, bancee, of than.		Power	haran, wijhan		Pick axe	kaozo	
Pigeon	kabutar		Praise	wakhar		Pitcher	dang	
Pill	goree		Prayer	gangat		Platter	surehoo	
Pillar	thamb		Prayer	dua		Perfumer	kateoon	
Pilgrimage	jearat	thunee.	Prevent, to	jhalan	taran.	Pleiades	poon	
Pillow	wihano	jatr.	Present	sukhree	dhono.	Pox, small	seyar	
Pipe	nari		Present	hazir		Palm of hand	taree	
Pipe for smoking	hukko	chilam.	Presence		muhar.	Paralytic	mando	
Pistol	tufancha		Press, to	daban, nipuran	peevan.	Penguin	pean	
Place	jace, kand		Price	mul, agh	baha.	Quadruped	wiran	whatr.
Place	pat		Priming	ranjak		Quarrel, to	jhero	
Plaintain	kerreeje pharee		Prison	chaburo		Quarrelsome	weru	
Plaster	lep	pharo.	Privy	bandee		Quarter of a rupee	pawlo	
Plaster, to	malam.		Profit	pu	parapat.	Quarter, (drec-	dis	
Plate	likaben	lumban.	Pride	labh	akar.	tion)	puchha	
Plate, covered	rand	patr.	Publish, to	hulayan		Question	paroch	
Play, to	rand karan		Pull, to	chikan		Quicksilver	math	
Plunder	phurth, lut		Pen	kancee	jugal.	Quiet	mathko	
Packet	guthree	khiso.	Punishment	saja	sikhman.	Quiet	mathkar	
Plain dealer	wesurah		Pupil	chelo		Quiet	seher	saho.
			Purposely	jhanee, bujee		Rablot		

English.	Dialect of Lar.	English.	Dialect of Lar.	Dialect of Sar.	English.	Dialect of Sar.	Dialect of Lar.
Rain	minh	Repose	aram	am	Sack	boro	
Rain, to	minh payan	Reprimand, to	ghurkan	sui.	Saddle	hauno, katro	
Raise, to	uthiyaran	Reproach	drapo	ubhalo.	Saddle of camel	kajawo	pakro.
Rains	drakh	Reputation	bharam	sakh.	Sail	sir	
Rascal	karamjado	Return, to	waran	motap.	Sailor	muhano	
Rat	kuwo	Reb	pausree		Salt, (Salt drier)	sun (nonaree)	
Razor	pakke	Rice	chawar		Salpetre	soro	
Read, to	parhan	Rich	hundwaro	whayin.	Sand	waree	
Ready	taiyar	Riches	kund,		Sash	lungee	
Ready, to be	samban	Riddance	bacha		Saffron	kesar	
Real	sab	Ride, to	ghore te charhan		Save, to	bachayan	
Reason	sabab	Right	sajho, theek		Say, to	chawan, puchan	
Receive, to	watan, ghan	Ring, (with stone)	a moondree chattee		Scabbard	khup	
Recommendation	rijaan	Ringworm	(do plain)		Scaldhead	ganjo	
Rear, to	parat	Ripe	dar	dad.	Scales	trakree	tarazu.
Rear, to (as a horse)	alipayan	Ripe	pakko		Scales of a fish	chittar	
Rectitude	shekathee thiyan	Rise, to	uthayan		Scarce	thoro	kaulo.
Recollection	sachayee	River	darya, wah	kasee.	Scholar	khutabee	khutab
Reconcile, to	sambhar	Rob, to	phoran	choran.	School	maktab	khainchee
Red	parchayan	Robber	phorn, chor	khosan.	Scissors	wichhu	bhattun [kar
Red	ratto, garo	Road	dhay, wat	pand.	Scorpion	chatee	kagurjo tuk-
Redness	garan	Roof	chat		Serap of paper	khajan, khotran	
Refuge	sam	Room	kotee		Scratch, to	samundr	
Refuge	kat, [ger to	Root	mur, par		Sea	muh	
Refuse, to	katan, dakan, stag-	Rope	noree	wadr, rasee.	Seal	golan	khajan
Reins	molayan.	Round	gol		Season	mund	mahal
Rein, part of do wag	lugam	Rose	gulab		Secret	guy	[an
Relation	sang, mair	Rub, to	phayan	ghontan.	See, to	dissan, nibaran	pasan, wajay-
Religion	seman	Run, to	drakan, bhajan	doran.	Seed	bij	
Remember, to	samban	Rust	kat, mer		Seldom	kadhen, kadhen	kgulo
Repeat	nirano	Rupee	rupayo		Self	pan, jhind	pino
Radish	mooree	Rump	sathar		Sell, to	viknan	[an
Report	wahee, awaz	Ring dove	geeran		Send, to	moklan, ponchay-	rasayan
		Roc, (a bird)	guran pukhee				

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Separate	dar		Sickle	datro	danto.	Snuff		nas
Seraglio	janano		Side	paso	dis.	Snuff box		dunghee, dublee
Serpent	naug		Sieve	gechan	paran.	Snuff, to		nas watan
Servant	belee		Sight	nigah		Soap		sabun
Service	belipo		Sign, to	bath akar wijhan	sahee karan.	Soft		koowaro
Settlement	chukayan		Silence, to	math karan		Soldier		sipahee
Sew, to	sibban		Silent	pat		Some		ko
Shallow, (water)	tango		Silk	rupo, chandee		Somebody		ko maru
Shadow	pachabee		Silver	gayen		Something		keheen mahal
Shake, to	lodan, lodayan		Sing, to	biyen		Something		kin kin
Shame, to	layan		Sister	biyan	adlee.	Son		putr
Shameless	nirjo		Sit, to	cham, khal		Son-in-law		jatro
Shape	muhandro		Skin	ubh		Song		rag
Share	bhangro	watt, bahro.	Sky	bano	asman, akas.	Soon		siggo
Sharp	tikho		Slave	nindr		Sound		wae, taka
Shave, to	kuran		Sleep	suman	gaharat.	Sound, to, v. n.		wajhan
Sheep	gheto, ridh	ghatto.	Sleep, to	hawren		Sound, to, v. a.		wajhayen
Shepherd	darar		Slowly	jutee	khallo.	Sour		khato
Sheet	chadar, rawo		Slipper	juteehanan		South		dakhan
Shew, to	dikharan		Slipper, to	nandro	mado.	Sparrow		jirkee
Shield	dhal	sipar.	Small			Speak, to		chawan
Ship	berree, dhoondee		Smear, to (with oil)	makhan		Spear		bhalo, naizo
Shoe	jutee, mochro		Smell	was	singan.	Speech		gah
Shoemaker	mochee		Smell, to	sungan		Spend, to		kharchan
Shoop, to	banduk hanan		Smoke	dunh		Spinning, to		air katanjo
Shop	bath		Smoke, to	dunh karan		Spirit, to		ibukan
Shore	kandee	puso.	Smoke, to in pipe	chilam chikan		Spite		wer
Short	mandro, mindro	hindro.	Snatch, to	khasan		Sow, to		winyayan
Short drawers		kanch.	Shirt	jamee, angrakah		Sprinkle, to		pokhan
Sigh	ubsae		Spider	koreero		Spy glass		chbandan
Shot	golee, rejo		Sneeze, to	chink dewan		Squeeze, to		darben
Shoulder	kuho		Snow	gogra kasran		Squall		dadan
Shut, to	payan, bandan	puran, butan.	Snow, to	barf	paro rohi.	Stairs		charnee
Sick	nachango	sukhalo.						

[yano.
nathee, ni-

tawar.

barchee.
chawancee.

nar.

jid.

bijj wijhan.

[ran.
khabra bha-

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Stand, to	ubhiyan		Sugar	khandr		Tall		dhriggo
Stack, of	turee	gauno.	Summer	unharo		Tea		chah
ree	taro		Sun	eyj	adit.	Teapot		chadan
Star	ch.birk		Sunday	achar, itwar		Teach, to		shikaran
Start, to	ch.birkan		Sunshine	us		Tear		baqun
Stay, to	ukan		Support, to	sambalan		Tell, to		chawan, akhan
Steal, to	phoran	chhurayan.	Surround, to	weran		Tenant		bharwaro
Stable	tambelo	kur.	Suspended	guman	adhotar.	Ten		daho
Stall	wado	watan.	Suspicion	gihan	bharan.	Tenth		dabun
Step	perojo rand	wikh.	Swallow, to	son khaman		Tent		tadhen
Stink	kin	gand.	Swear, to	pagghar		Then		hetre
Stint, to	kinno thian		Sweat, to	paggharjan		Thence		tenhlai
Stirrup	rikab	kanjak.	Sweeper	chuhro		Therefore		ulte, ode
Stock, (of a gun)	kundak, katt		Swing	hindoro		Thick		gato, thullo
stocks	rahan, kod		Swing, to	ludan		Thief		chor
Stone	manjee		Swimmer	taru		Thigh, (and leg)		langh, sithar
Stone of a ring	manjee		Sweet, (sweet ba- sil)	mitto, (nazbu)		Thing		shaee
Stool	manjee	jukan, rukan.	Sword	tarar		Think, to		janan
Stoop, to	wach	chob.	Small copper coin	kaseero		Thirst		unyay
Storm	bihan, rokan	athan.	Small copper coin	damree		Thirsty		unyayo
Stop, to	akhanee		Saltpetre	kalar		Thither		ede
Story	siddo	sawon.	Stand for hanging			Thorn		kando, babru
Straight	ghagho diyan		a cauldron on	marang	[of iron	Thread (spun)		saggo tand
Strangle, to	ghagho		Spoon of wood	doero, chamcho,		Threat		tab
Stratagulation	ghagho [aree]		Screw	keeree		Threaten, to		tab diyan
Straw, (of wheat)	bole, karb, (of jaw- for)		Squinting	iredo		Thistle		kanderee
Skein, of thread	kanan		Teal,	punch	punchree.	Threshold		chawat
Strike, to	saggo, dhago	agat.	Tailor	darjee		Throat		gechee
String	kappa lahan	saggo.	Take, to	watan, jhalan		Through		takht, gaddee
Strip, to	chro		Take down, to	lahan	kaba karan.	Through		par, men
Strong	ocho		Take care, to	sar lahan	sogo karan.	Throw, to		uchhlayan
Such						Thrust, to		peban
Suddenly						Thunder, to		gajan

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Thunder	gor	wisfat.	Tremble, to	dhudan	dhakan.	Urine, to		
Thursday	khamis,		Tribe	koum zat		Use	mutan	
Thus	iyen		Tribute	malee	dhal.	Useless	taudo, kam	
Tie, to	bandhan		Trouble	duk	khapat.	Upper garment	nakaro	
Tiger	sinh		Trowsers	suthan			peerahan	
Tight	torce taecen		True	sachcho		Velvet	bakhmal	
Till	lorce taecen		Trust	wesah	bharoso.	Venetian	bukhee	seetaramee.
Time of famine	lagan, sudhee		Truth	sach		Very	ghano	
Tire, to	awasar.		Try, to	parkhan	azmayan.	Vessel	berce	
Tired	wirehayan.		Tune	rag	sur.	Very well	ghano chango	
Tired, to be	thakel.		Turban	pag, patko		Victory	latch	sobh.
Title	thakan		Turn, to	phiran, ghuman	ghumayan.	Vile	kamno	pajee.
Title tattle	lakab		Turn, v. a.	phirayan		Village	got, waste	raj.
Tobacco	galhayan	ghusplus.	Twice	ba pher		Vinegar	got mau	
Toe	tamaku		Twist, to	war divan		Visit	sirko	
Together	perjo angur		Turnip	gogru		Visit	for	
To-morrow	nal, sath	hekando.	Torquise, small	ikh		Voice	gadjan	sur.
The day after to-	subhaee	subhane.	Thumb	angoot		Vomit, to	wace	
Tongue	parin		Tasteless	phikoo		Vomiting	kadhan	
Tools	juiba		Tower	kungaru			ok	
Tooth	hahiyar		Tickling	katkaee				
Toothpick	dandan.		Tripe	ojree		Wait, to	bhan, tikan	
Top	dand	dandere.	Tailor bird	musru		Wager, to	hod bandhan	
Touch, to	chuhuan.	choto.	Test for metals	kaswatee		Waist	chel	
Tortoise	kachhwa		Ugly	buchro	bhundo.	Wake, to	jagan	
Tow, to	chikan, nyun		Uncle	heth		Walk, to	hahan	
Towards	pase, de		Under	heth		Wall	bhit	
Town	shahr frando	nagar.	Understand, to	ghan	sanjan.	Want, to	guran	
Trade	wepar	sodo.	Until	jistonee		War	jung jero	
Traveller	wataru	pandheru.	Up	te, mathe		Wash, to	dhuwan	
Treasure	khazano		Upon	te		Washerman	khatee	pet, charho.
Tree	wan per		Upright	ubho		Watch, (guard)	paharo, jago	
Tree, root of	thur		Upside down	lath	ubhto.	Water	paneer, sandaro	
						Weary	thakko [water bag]	

English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.	English.	Dialect of Sar.	Dialect of Lar.
Weak	hino	mund.	Witness	shahid	mihtee.	Youth	jawanee	lasiyar.
Weather	wa		Woman	zal		Yours	oobasee	
Weave, to	unan		Wood	kathee				
Weaver	koree, unanwaro		Word	galh				
Wedding	wehan	hafto.	World	'dunya, hay				
Week	sat dare		Worn	'kiyon				
Weep, to	'uan		Worth	'mul baha				
Well of water	khuh		Wound	gha	'phat, duk			
Weigh, to	'taran	ulanhado.	Wrap, to	weran				
West	olo		Wool	jun				
Wet, to	pusayan		Write, to	likhan				
What	chha	kujaro.	Writer	likhanwaro	muharrat.			
Wheat	kanak		Wrong	kurho				
When	kadhen		Widow					
Whence	kithan		Wick of a candle	wat				
Where	kade	kithe	Woolen thread	oonsutr				
Wherefore	kinakare	kujare lai.	Woodcutter	'batharu, dayo				
Which	keho		Whirlwind	wachoro				
Whip	chamkee	korro.	Watermill	aitr pokhinjo				
White	achho	kerh.	Woof	petoo				
Who?	keho		Weak-sighted	chuchoo				
Why	koh	kujare.	Wrist	karaeon				
Widow	runera	ran.	Wood, an insect that destroys	sasar				
Wife	zal	joe, ba.	Weasel	aoreero				
Wind	wa		Wild duck	aree				
Window	daree		Year	warenh, lai				
Winter	siyalo	khadkan.	Yellow	zafaran, zaido				
Wipe, to	malan	siyanaf.	Yes	han				
Wise	siyano		Yesterday	kal				
Wisdom	siyanupo		Young	tiyodih				
Wish	gur			jawan				
With	san							
Within	wich, manj							
Without	bahar							

NAMES OF DIFFERENT ARTIFICERS AND THEIR IMPLEMENTS.

English and Sindee.		English and Sindee.	
Carpenter's Tools.		Cotton Spinner's Implements.— (continued.)	
Adze	wahlo.	Brush	seeree.
Auger	sarabee.	Reel	bhanyanee.
Adze, 2nd	adee.	Roller	taro.
Bevel	goona.	Top of comb	rachh.
Bricklayer's hammer	tesho.	Shuttle	naro.
Compasses	pargar.	Treddie	chapree.
Chalk line	rango.	Part of do.	paisar.
Tile	kanaho.	Lever	phirnee.
3-Cornered do.	sohano.		
Guage	khat kash.	Goldsmith's Tools.	
Hand saw	karabee.	Anvil	sandan.
Hatchet	kuharo.	Anvil block	adee.
Oilstone	rohee.	Blowpipe	dawnee.
Plane	rando.	Brush	waruchee.
Rabbiting plane	jaree rando.	Crucible	katoree.
Plummet	shal.	Large brush	patranee.
Mortice chisel	rambho.	Coal chisel	chhenee.
Small do.	rambhee.	File	rawatee.
Large rabbiting plane	darajo.	Forceps	cha'h.
Smaller do.	maicho.	Hammer	matriko.
Smallest sort of do.	peshro.	Small do.	chorasu.
Saw	kart.	Ladle	rajo.
Smallest hand saw	jabano.	Mould	top.
Trowel, or rather jehband.		Pincers	anbur.
A flat piece of wood for plastering	tunko.	Punch	sumbh.
Largest sort of do.	daskhatt.	Shears	kat.
		Tongs	saraj.
Potter's Tools.		Shoemaker's Tools.	
Cutting string	wijho.	Awl for cloth	khawndee.
Flattener	tapnee.	Awl for leather	ar.
Ditto	kaneru adare.	Lap stone	rohee.
Wheel	chak.	Mallet	moongra.
		Rubber	kewar.
		Plank	takhto.
		Frame	kalib.
		Shoemaker's knife	rambee.
Turner's Implements.		Cutler's Tools.	
Auger	bhrimo.	Adze	wahlo.
Bow	kamanjah.	Gouge	nahee.
Chisel	rambh.	Cutler's grindstone	siranee.
Do. small	rambhee.	Knife	rambhee.
Gouge	nahee.	Burnisher	karee.
Point	bharakee.	Hand saw	karabee.
Rappets	jandree.	Oil vessel for polishing	tilandee.
Rest	seerahee.	Pumice stone	karand.
		Wood for do.	kapatee.
		Scraper	rando.
		Powderer	mooe.
Cotton Spinner's Implements.		Carder of Cotton.	
Loom	hastree.	Pestle	taro.
Comb of do.	phanee.	Roller	panatee.
Wire of do.	saraee.	Bow of carder	dawnee.
	manee.		
	adlakkee.		
	rassee.		
Parts of the Loom	kalee.		
	naree.		
	bhirnee.		
	khirkee. *		

* Carpenters do all the Bricklayer's work in Sindh, or rather the two Trades are united in one person always.

English and Sindee.

Carder of Cotton.—(Continued.)

Catgut	nar.
Carder	pinyaree.

Bookbinder.

Lapstone	rohee.
Rubber of wood	mungro.
Compasses	palgar.
Stamp for flowers	sambho.
Iron ruler	khat kash.
Press	shikanjo.
Rubber of stone	mohro.
Knife	kat.
Polisher, (wood)	with vermilion die khewar.
Brass pen formaking	kalam jalwalce.

Blacksmith.

Anvil	sandan.
Sledge hammer	wadan.
Hand do.	matriko.
Tongs	ubhra.
Pointed anvil	mekh sandan.
File	rawatee.
Punch	chhenee.
Large tongs	oobhr waddo.
Auger	sarahee.
Borer which forms the barrel	burko.
Pointed do.	bhrimo.
Wooden rest	charkhee.
Press	sikanjo.
Nut of do.	dedee and takhto.
Screw	pech.
Wooden anvil	adee.
File	neemgarda.
Punch	sumbh.
Large bellows	khahee dhawaujee
Poker	anguro.
Nose of bellows	beeoo.

Cornice-maker,—Kamangar.

Needle	suo.
Lever	chilmurdo.
Hair brush	moosee kalam.

Bracelet-maker,—Churangar.

Lathe	jantr sukhajalo.
	sand.
Rest	sakhal lohajo.
Bow	kaman.
Chisel	karbana.
Chisel	pat mahtano.
Point	borakee.
Ditto	cheeran.
Ditto	singaree.
Grindstone	seran.
Point	naho.
Stock	manjee.

English and Sindee.

Coppersmith,—Misgar.*

Hammer	wadan.
Shears	kat.
Tongs	ambooree.
Poker	angooree.
Brasier*	thantaru.

* Same as the above.

Parts of the Spinning Wheel,—Suman antrjo.

Foot	manjee.
Legs	jangh.
Upright	moona.
Winch	makree.
Spoke	latan.
Spokes	taree.
Axle tree	guj.
Distaff rest	chamotee.
Distaff	trak.
Thread	dor.
Cotton round the distaff	peer.
Shoulder	gareoo.

Black pepper	mirch.
Colocynth	trulche gar.
Myrrh	gugur.
Wadf roomee	wadfroomee.
Scammony	mahmoodah.
Ginger	soonth.
Henbane seed	jani khorasane.
Euphorbium	kheer kowarjo.
Parsley	garfu.
Sweet basil	naug kaisar.
Hyacinth	mur.
Polypody	jalwataree.
Galangal	nagar moonth.
Zedoary	kafoor kachree.
Thorn apple	dhatoora. chareoo.
Zedoary	jadwar.
Satyrion	salibh.
Marsh mallows	bij khairajo.
Mehilot	agar.
Sweet cane	taj.
Cassia	chatrak.
Fumitory	sindoleon.
Mustard	ahur.
Wood	datoro.

Wild spikenard	sitawar.
A cathartic root	trakara.
A Boq rush	treej.
Aniseed	katoela.
Beanpods	wadf.
Wood of aloes	doop sangara.
Rue	agar.
Indian spikenard	kinnee bootee.
Myrabolan	kamal patr.
Belleric myrabolan	awrah.
Dried grapes	baherah.
Rind of myrabolan	drakh karee.
	wawgang.

English and Sindee.

Sesame	kalamchee.
Liquorice, (the juice)	sheeri mitthee kat-tee.
Capers	karwalce.
Silk	pat.
Orange	sangtaree.
Barberries	zariskh.
Cardamoms, large	walida photo.
Do. small	nandra photo.
Rosin	pareah.
Melissa	bulango.
Ituby	chunee.
Red coral	goonata.
Pearl	mootee.
Seed of ash tree	andayee.
Musk	khas-tooree.
Water lily	gul koonajee.
Bole ammoniac	songeru.
Testicles of the	khasiya ludra.
Cubebs [beaver]	kabab cheence.
Tin	kalaee.
Funitory	peeta pipar.
Cocoanut [leaves]	nariyal.
Juice of neem	raswal.
Lawsonia inermis	mendee.
Saffron	bakhru.
Poppy seed	khas khas
Juniper	ahoover
Ashes of balm	bhains lochan.
Wild sorrel	chuko.
Tulsee	langajo bij.
Red rose	gul-i-gulab.
Beetlemut	suparee.
Worm seed plant	kando.
Melon seed	gedarejo bij.
Nut-like pistachio	narzah.
Liquorice	mittee kuthee.
Cucumber	badrang.
Long pepper	pepre.
Cypress root	lesoorah.
Fruit of tamarisk	sakar.
Oak apple	mawa.
Pomegranate	daru.
Saffron	kaisar.
Gum arabic	khori.
Poppy	dodejee khal.
Coral root	par marjan.
Amber	kapur.
Dragons' blood	paho surkajee.
	bekh morah.
White sandal wood	sirkhand.
Red do.	ratanan.
Oyster shell	sipee.

English and Sindee.

Pomegranate flower	gul darujee.
Gum lac	[ers] lakh.
Tamarind	gidamree.
Ber	zizyphus jujuba.
Dog's bane	chhimkane.
Honey	makhee.
Nutmeg	jafar.
Cinnamon	khal dalcheence-
Nightshade	peru. [jee.
Leaf of do.	kawal.
Ceruse	[lentil] safeta.
Stone, shaped like a	damra pahau.
Juniper berries	waund.
Pomegranate leaves	daroo pan.
Asparagus	naug dawau.
Nitre	jau khar.
Senna of Mecca	Sana makajee.
Linseed	bekh kahojee.
Armenian grain	mahlat.
Marjoram	pineer.
Cherry	jamalgoto.
Costus	kath kathia.
Pumpkin	kadu.
Southernwood	boee madeena.
Anise	sooa.
Betony	bakaren.
Burnt brick	guhut.
Mint	phudana.
Yellow myrabolan	harir.
Do. black	harir kara.
Sarcocolla	guna.
Scuttle bone	samundr pheon.
Hemp	bhang.
Rapeseed	sir.
Nettleseed	ootawgan.
Spinage	jefangar.
India thorn	dramaha.
Fennugreek	mathecho bij.
Clove	lawang.
	waru.
Extract of oil	sheer sirjee.
Nosesmart	alroo.
Hemp seed	bhang.
Bastard saffron	pawara.
Trefoil	bij shambajee.
Wild carrot	gajar khorasance.
Sorrel	sag.
Wild rue	harmal.
Damascene plumb	alu bhokhara.
White dog rose	bahman acho.
Red do.	bahman garho.
Coriander seed	dana.
Chinese rhubarb	rewand cheene.

Report on Upper Sindh and the Eastern portion of Cutchee, with a Memorandum on the Beloochee and other Tribes of Upper Scinde and Cutchee, and a map of part of the Country referred to. By Lieutenant J. POSTANS, Assistant Political Agent. From the Political Secretariat of the Government of India.

1st. "Upper," known in the language of the country as *Sirra*, or the northern division of Sindh, may be said to extend from Sehwan on the south, to Bukkur and Roree northward, and to include the whole tract of country tributary to the Khyrpoor and Hyderabad chiefs on the plain of the Indus, east and west, between these places (Sehwan and Bukkur). Our political division of Upper Sindh, however, is of a much more limited extent, and includes only the Khyrpoor possessions, and the lands and revenues derivable by the Hyderabad Ameers from [Shikarpore and its dependencies. To this division I shall confine my observations.

2nd. Khyrpoor, the capital of the chiefs of that branch of the Talpôr family, is situated to the eastward of the river Indus, about sixteen miles south-east from Roree, (the ancient Hindoo capital of Sindh,) and about ten miles from the river in a direct line. The territory tributary to the Khyrpoor family extends to the north to Subzulkotee; south to Mittanie, (on the river); eastward of the river to Shahgur, belonging to the Dejee chief, Alli Moorad; and westward of the river to Tull, capital of the Beloochee Purgunnah of Boordekur, on the borders of the Brushhooree desert, which separates Upper Sindh from Cutchee. The possessions of the Ameers of Hyderabad in Upper Sindh dependent upon the populous and important town of Shikarpore, extend to about eight miles west of that town to Asseemghurry; east to about six miles, (Khanpore); south to about eight miles (Lukkee); north to Rajhan and Mobarickpûr.

3rd. The soil throughout the whole of the tract of country above mentioned, may be generally described as a rich alluvial, alternating occasionally with loose sand, rich and highly favorable for cultivation; the whole is within the influence of the inundations of the river Indus, which commence to be available for purposes of cultivation in April and May, and cease in September or October. The land when cultivated is unusually productive, but owing to a scanty population,

and mismanagement on the part of the rulers a comparatively small portion is brought under tillage, and the inundations are allowed to flow through immense tracts of country, without being rendered available to the purposes of cultivation.

4th. In the Khyrpoor territories eastward of the river, of the various productions of the soil, indigo is the most valuable, and in some parts, of a description superior to that of Bhawalpore and the Punjab. The staple productions of Upper Sindh, however, are sugar-cane, (near the river,) jowaree, wheat, barley, moong, gram, cotton, tobacco, sirshuf, (mustard seed,) rice, badjree, and the other grains common to India. In the vicinity of Shikarpoor, the poppy is extensively cultivated; wheat is the great *rubbee* or spring, and jowaree and rice the *khurreef*, or autumnal crops. Cultivation commences in April and May by means of the inundations, and the crops are reaped in October and November. The wheat, or *rubbee* crops are raised by irrigation from wells, or *bunds*, formed from the inundations. The soil of Upper Sindh, (as indeed throughout the whole of both divisions of that country,) is strongly impregnated with saline matter, and a thick incrustation of salt is every where observable on its surface. Saltpetre is produced in great quantities, and Sindh is noted for its powder. I shall conclude the above brief remarks on the soil and cultivation of Upper Sindh by observing, that this tract of country is favored beyond most others, with extraordinary natural capabilities, and that causes into which it is not necessary to enter here, would appear alone to prevent its being thickly populated, and for its given space, one of the richest and most fertile districts of the East.

5th. The general appearance of the country is an uninterrupted flat, its uniformity in this respect being only broken by a low range of limestone hills through which the river flows at Sukkur and Roree; these extend to some distance towards Khyrpoor on the eastern side; but for a short distance from Sukkur, on the eastern bank where cultivation does not obtain, the soil is covered with a thick low jungle of the tamarisk bush and baubul and camel thorns. In the vicinity of Roree and Shikarpoor, are some rich gardens, and the mangoe, date, acacia, neem, mulberry,* and pekul trees obtain great size and perfection; but expect at these places, a tolerably sized jungle tree

* There can be little doubt, but that silk might be advantageously cultivated in this country.

is rarely met with to break the monotony of a complete level, and universally low tamarisk jungle. The whole country is intersected with canals and water-courses, and many portions during the height of the inundations are for miles completely under water. This is particularly the case in the neighbourhood of Shikarpoor, and the intermediate tract between it and Sukkur, the river having of late years shewn an inclination to the western, to the detriment of the lands and revenue of the Khyrpoor possessions on the eastern, side.

6th. I have before observed, that Upper Sindh is thinly populated, towns and villages are scantily sprinkled over the country. Of the former, the most important in the whole of Sindh, for its wealth, population, and trade, is Shikarpoor, situated at a distance of about twenty-eight miles N. W. from Sukkur; its general appearance is like that of all others in Upper Sindh, filthy and ill built, its walls in total disrepair, and surrounded by large stagnant pools of water; it is redeemed, however, by its gardens. The population of Shikarpoor by a late census may be about 30,000, of whom 20,000 are Hindoos. All the trade and banking transactions for which Shikarpoor is noted all over India and Central Asia, are in the hands of the Hindoos, who enjoy an unusual degree of toleration, and have obtained an influence which the policy of the rulers dictates should not be disturbed. Khyrpoor is a paltry ill-built town, possessing few claims to notice as a place of trade or wealth, and only important as the residence of the chiefs, Meer Roostam and other members of his family. Meer Alli Moorad, his brother, has his stronghold at "*Dejee Kha Kote*." Roree retains some of the remains of its former wealth, and from its position on an elevation overlooking the river, has an exterior of respectability, little according with its interior state of dilapidation and decay. Sukkur may be said to be a ruined and deserted town, though there can be no doubt, both of these places will daily acquire greater importance, from our influence on the trade of the river Indus, and the countries on its banks. Beyond the above, there are at present no towns which may be classed as of any size or importance in Upper Sindh. In certain divisions of the country under a Beloochee zemeendaree, a small mud fort generally forms the residence of the chief, and capital of the tribe. The villages are a collection of mud huts, with a flat roof; the out-houses are formed of reed mats, and in many villages the dwell-

ings are entirely of the latter, the excessive dryness of the climate rendering them sufficient for the protection of the inhabitants; a small mud tower is generally to be seen in the centre of the village, forming a sort of stronghold, and few patches of cultivation are without the same refuge for the husbandman. There is little in the appearance of the towns or villages of Upper Sindh, to impress the observer with a favorable opinion of the condition of its inhabitants, and the whole forms a striking contrast to the air of comfort and security, to be met with in other provinces and countries, far less favoured with natural advantages than Upper Sindh.

No. 2.

1st. There are no rivers in the division of Upper Sindh, to which this memorandum is limited; the two great canals
 Rivers and Lakes. which form outlets to the waters of the Indus, are first the "Sindh," which has its mouth a few miles above Sukkur, and passes within a mile of Shikarpoor, proceeding towards Larkhana. This canal is the great means of irrigation to a large extent of country between Shikarpoor and the river, and of immediate value to that town in providing inland navigation for much of its trade during seven months of the year; it has been neglected, however, though a small outlay would increase its value and importance to the revenue; as well as add to the resources of trade and cultivation.

2nd. The "*Bijaree*" nullah, has its mouth in the Beloochee pergunnah of the Khyrpoor territories westward of the Indus, known as "Boordekur," about twenty miles higher up than the Sindh, and waters a great extent of country passing through the above pergunnah, and that of Koopore as far as Kajhan on the edge of the desert. Innumerable smaller canals are led from the two above mentioned, such as the "Noorwah," "Murwah," "Ruswar," &c.

3rd. There are no tanks in Upper Sindh, though it is unnecessary to observe, that they might easily be constructed, and to the great advantage of the country during the dry season, *i. e.* from October to March. The inhabitants of the districts obtain a scanty supply of water from temporary wells dug in the beds of nullahs, a well of masonry and natural springs being seen but rarely, except in the larger towns.

No. 3.

In Upper Sindh, there are no periodical rains, and its year would therefore appear to have only two seasons; viz. the hot and cold. The natives of the country, however, divide it into three; viz. *Bahar* (or spring,) *Tabistan* (hot season,) and *Zemistan*, (cold season,) and strictly speaking, it may, from its latitude, be thus divided. The spring is of very short duration, for the cold up to the end of February is often very great, whilst the heat from the commencement to the middle of March, is little exceeded by that of the three following months, and the period of a temperate climate therefore between the extremes of the cold and hot seasons is very brief. The hot season may be said to commence from the middle of March, and continues generally without intermission until the end of August, or middle of September. Storms of thunder with rain occasionally occur in June or July, affording a temporary cessation from the intense heat; but they are by no means to be depended upon. A curious phenomenon is observable in this country on the setting in of one of these storms, it being always preceded for two or three days by a close atmosphere, loaded with a fine description of sand, giving the effect of a thick fog; but immediately previous to the bursting of a storm, the air is literally darkened by immense volumes of sand, driven in black masses before the wind, obscuring the whole surface of the country. These sand storms are the natural effects of the desert tracts surrounding Upper Sindh, over which no violent wind can pass without raising clouds of the shifting sands which cover their surface. With the exception of these passing storms, Upper Sindh is free from the annoyance experienced on this account in the delta during the prevalence of the south-west monsoon. The heat of Upper Sindh from the middle of April to the end of July, is said to exceed that of any part of India, and the range of the thermometer has been known in a verandah to have reached 145°; in a tent it is by no means uncommon to find it at 120°; the hot winds continue to blow severely till midnight, but the mornings are generally cool. The atmosphere is remarkably dry, and generally clear, the ranges of the thermometer during the hot months, do not indicate any great variation. Storms of rain are frequent at the vernal equinox.

During the cold months, *i. e.* from October until the end of February, the climate of Upper Sindh is pleasant and salubrious, frost and ice occasionally occur, and vegetation assumes the appearance of winter in a northern climate. The sun of Upper Sindh is singularly fatal in its effects, not only upon the European, but the native constitution, and during certain periods of the year, exposure to it by the people of the country is as much as possible avoided. There can be no doubt that the climate of Sindh is most trying to the health of Europeans, and a residence of two or three years in it, would undoubtedly tend much to undermine the constitution. During the subsiding of the inundations ague is very prevalent, but in its mildest form. Although Upper Sindh is not exempted from the diseases and epidemics common to the East, it is yet as free from them as most places, and but for its intolerable heat, would be far preferable in point of climate to Lower Sindh, or the Delta of the Indus.

No. 4.

Our acquaintance with Upper Sindh has been too short, to allow of accurate statistical inquiries, and I cannot therefore venture any remarks on this head. A census which is now in progress of the town of Shikarpoor would seem to shew, that the estimates formed of the population of the principal towns in Scinde, Upper and Lower, have been overrated; thus, Shikarpoor was calculated at 50,000, its real amount being somewhat under 30,000. The population of Upper Sindh may be divided into three classes, Hindoos, Sindhees, and Beloochees. The Hindoos carry on all the trade, not only in the large towns, but are the means of supplying the necessaries of life to the whole of the inhabitants of the country, and few of the smallest villages are unsupplied with a Banyan's shop. The Hindoos of Sindh are necessarily, from their position in a Mahomedan country, a degraded and tolerated class; they are the only people, however, who amass wealth, and to this end are content to suffer any degradation. So useful are the Hindoos in these countries, that their lives and property are generally respected by the most lawless tribes of Beloochees, and they have establishments in the heart of the hills, at "Deerah" and "Khan," the strongholds of the Murrees and Boogties. The Soucars of Shikarpoor are

well known for their wealth and banking influence in India, and the countries North-west, where few of the marts are without agents from Shikarpoor, and hoondies are procurable at that place, from Calcutta to Khiva.

The annexed memorandum which I had formerly prepared on the different tribes inhabiting the tract of country between Sukkur and the Bolan Pass, including as that tract the part of Upper Sindh I have alluded to, will it is hoped, supply any further information required, as to the classification of the inhabitants.

No. 5.

1st. *Animals*.—In the jungle and wastes of Upper Sindh, are found the hyena, jackal, hare, partridge, (black, painted, Natural Productions and common grey,) quail, oobarn, (a description of *Otis*, between the floriken and bustard;) and in the tanks and marshes, caused by inundations, wild fowl of every description and in great quantities. The wild hogs commit great destruction in the cultivation, and are a favorite source of amusement to the wealthier Sindhians and Beloochee Chiefs, who hunt and shoot them. The tiger and leopard, are said to be found in the neighbourhood of Sukkur; but it is doubtful if they descend lower than the Bhawalpore territories, where they are said to be numerous. Hawking is a favorite method, amongst the poorer classes, of catching quails and partridges, both of which abound in Upper Sindh.

2nd. In the *Botany* of Upper Sindh, there is nothing of interest; the medicinal herbs, roots, or gums in common use, or for purposes of trade, are supplied from other places.

3rd. *Minerals*. In that spur of the Sullimani range, known as the Murree and Bogtie hills, from the tribes inhabiting them, sulphur and alum are found in some quantities, and form important articles of trade. The settlement of these distracted districts will eventually afford us the desired opportunity, of further enquiry, and doubtless of improvement in the working of the mines. A stone of any description, beyond the limestone procurable at Sukkur and Roree, is not to be seen between the river and the hills* above mentioned, and

* The Murree hills are for the most part composed of sandstone conglomerates and lime.

to a depth of sixty feet below the surface, nothing but the finest description of sand is observable, the superstrata being the alluvium before alluded to.

No. 6.

The gardens of Upper Sindh produce the plantain, apple (very small description,) vine, (Caubul,) nectarine (inferior) mulberry, mangoe, (a superior kind,) date, tamarind, jumboo, lime, (sweet and sour,) and pomegranate trees, melons, (from Kandahar seed, &c. of a very fine description,) all the country vegetables common to India; hemp is cultivated for its seed, *bang* being in common use throughout the country, and amongst all classes. The European vegetables thrive remarkably well at certain seasons of the year, and the potatoe might be introduced to great advantage, as it is found to answer admirably.

2d. Implements of agriculture are of the rudest kind, the plough is smaller, and not so heavy as the common Indian plough; the seed is thrown in the soil after the slightest surface has been raised, no manure is required or used, the inundations bringing with them a certain quantity of slimy matter, highly conducive to fertility. The land is allowed to remain fallow from the period of reaping one crop in the autumn to that of sowing the following spring crop, when a few days are sufficient to prepare it for the seed. Agriculture is, in short, of the simplest kind, nature having done too much for man in these countries to induce him to exert himself in improving the soil by artificial means.

3d. The domestic animals are the buffaloe, a small but useful description of white cattle, sheep, and goats. The camel is had in great quantities in these countries, but is of a size and class inferior to those either of Marwar or Central Asia. This animal is in general use in Upper Sindh.

No. 7.

1st. The commerce of Upper Sindh is confined to Shikarpoor, Commerce and Manufactures. Khyrpoor, and Roree, a general list of the imports and exports of the former, which is the great mart of the country, will, however, prove sufficient. Shikarpoor

receives from Karrachee-bunder, Marwar, Mooltan, Bhawulpore, and Loodhiana, European piece goods, raw silks, ivory, cochineal, spices of all kinds, coarse cotton cloths, raw silks, kimkaub and silk manufactures, sugar-candy, cocoanuts, metals, *kirum*, (or groceries,) drugs of sorts, indigo, opium, dyes of sorts, and saffron. From Cutchee, Khussan, and the North-west, raw silk, fruits of sorts, madder, turquoises, antimony, medicinal herbs, sulphur, alum, saffron, assafœtida, medicinal gums, cochineal and horses. The exports from Shikarpore are confined to the transmission of goods to Khorassan, through the Pass of the Bolan, hence Shikarpore is one of the gates of Khorassan; and a trifling trade with Cutchee, they consist of the following: indigo (the most important,) henna, metals of kinds, country cloths, European piece goods (chintzes, &c.) Mooltan coarse cloths, silks manufactured, groceries and spices, raw cotton, coarse sugar, opium, hemp seed, shields, tobacco, embroidered horse cloths, and dry grains. Through the excessive jealousy of the *Ahilkars* at Shikarpore, in revenue matters, it is difficult to ascertain the value of the trade of the place; but some estimate may be formed from the revenue thence derivable, and the amount of this last year was ascertained to have been about 55,000 rupees from commerce, (see list of duties by the author published in the Bombay Government Gazette, under date the 28th July). The manufactures of Upper Sindh are confined to the preparation of coarse cotton cloths, particularly in the Khyrpore territories, and at Roree to the weaving a coarse description of silk fabric, known as "*duryan*," from the raw silk imported from the North-west. In artizans of every description, this country is totally deficient, and even the preparation of leather, for which Lower Sindh is somewhat celebrated, is quite unknown in Upper Sindh.

No. 8.

The Khyrpore possessions in Upper Sindh consist of 14 Talookahs Talookahs and Villages, and 556 Villages, thus:—

<i>No. of Villages.</i>				<i>Names of Talookahs.</i>
137	..	..	..	1. Derbela.
43	..	.	..	2. Kundearee.
51	..	..	..	3. Ghagivree.
31	..	..	..	4. Khyrpore.

<i>No. of Villages.</i>	<i>Names of Talookahs.</i>
89	5. Height Tuppahs.
15	6. Der.
15	7. Bhoong Baud.
5	8. Subzul.
23	9. Boordekur.
15	10. Chakmazarchee.
13	11. Roopal.
66	12. Scattered.
48	13. Laddah Gajan.
5	14. Shuldadpore.

556 Villages.

The amount of revenue divided between the 16 members of the Khyrpore family is about 20 lacs annually.

The Talookahs and Villages appertaining to the Shikarpoor Pergunnah, from which revenue is derivable by the Ameers of Hyderabad, are as follows:—

<i>No. of Villages.</i>	<i>Names of Talookahs.</i>
5	1. Mahal Kahee.
7	2. — — Lukee.
5	3. Mobarickpore.
6	4. One-third of Roopur.

23 Villages.

The amount of revenue derived from the above is 1,18,500 rupees, divided between Meers Noor Mahomed Khan and Meer Hussen Khan, (the former 75,000 and the latter 43,200.)

Shikarpoor, 1st August, 1840.

Memorandum on the Beloochee and other Tribes of Upper Sindh and Cutchee.

1. Few tracts of country of equal extent present so great a diversity of tribes as that lying between the Indus at Bukkur, and the great Pass of the Bolan, and as the new position which we at present occupy in Affghanistan, has rendered this portion of country an open line

of communication, and consequently brought us in connection with its inhabitants. The following list of the various tribes, with their subdivisions may be considered interesting. A map accompanies this memorandum, which explains the portion of country occupied by each tribe, whether Sindee or Beloochee. In the memorandum, the towns, villages, cultivated or waste lands, &c., are not given, as the subject may form one for a more statistical and detailed report hereafter.

No. 1.

A numerous tribe of cultivating Beloochees, inhabiting the whole of the intervening country between Sukkur and the
 Khosahs. Sindh canal, towards Shikarpoor, and from thence, to the westward of Rajhan, along the edge of the desert. The Khosahs are not a predatory tribe, but employ themselves generally as cultivators. The portion of their country between Sukkur and Shikarpoor, is rich and productive, owing to its facilities for irrigation. The Khosahs during the Kalarah dynasty, had considerable possessions to the eastward of the river Indus, beyond Khyrpore. This tribe has four sub-divisions,—

1. Kuloolanee, (the chief is of this tribe.)
2. Bukiume.
3. Tonceanee.
4. Sooreeanee, (near Rojahan.)

Tributary to the Khyrpore government, and the chief holds jaggeers under a sort of feudal tenure.

No. 2.

The Juthooee are a small tribe, inhabiting the tract of country immediately to the east of Shikarpore, extending
 Juthooee Beloo- to the Indus in that direction, to the confines of
 chees. Boordekur and the Sindh canal, on the north and south. The Juthooees were predatory, but the Khyrpore government, to whom they are tributary, has considerably restrained them, and they now bear a good character as quiet cultivators. The encroachments which the neighbouring tribe of Beloochees are constantly making on the Juthooee lands, has occasioned a feud between the two tribes, shewing itself in repeated acts of violence, which are stopped by the chiefs,

when they become mutually detrimental, under a compact of peace, for a certain period. The Juthooees have the following subdivisions:—

- | | |
|-----------------|---------------------|
| 1. Brahmanee, | 7. Sungujur, |
| 2. Beijaraneer, | 8. Rodranee, |
| 3. Budanee, | 9. Sheran, |
| 4. Shadingur, | 10. Khoṣan, |
| 5. Julleeclee, | 11. Seyed Khananee. |
| 6. Sahawanee, | |

The principal town is Durapur, situated to the east of Shikarpoor about twenty miles. The Juthooee country is necessarily productive, in consequence of its facilities for irrigation.

No. 3.

The Boordies form a numerous and powerful tribe of Beloochees, inhabiting the country to the north-east of Shikarpoor. The bounds of Boordekur extend to the south to the Indus; north to the Soolyman range and the Boogtie country; east to Gooblah, and the Budanee, and Kulkee tribes of Jutt; and to the west to midway between Tull and Meerpore. There are four principal Sirdars, or heads of tribes in Boordekur.

Boordekur is rich and productive, being advantageously situated for irrigation from the river. Jowaree is the principal cultivation, wheat, however, is in some parts plentiful. The Boordies are essentially a predatory tribe; their whole country is tributary to Meer Rustam of Khyrpoor, and pays in kind according to seasons. The Boordies are sub-divided into fourteen tribes, as follows, three of them have again their sub-divisions:—

- | | | | |
|------------------|----|---|-----------------|
| 1. Boonglaneer, | .. | { | 1. Shuragye. |
| 2. Ghajhaneer, | .. | | 2. Kunderanee. |
| 3. Kuneesaneer, | .. | | 3. Dyreeanee. |
| 4. Nidwaneer, | .. | | 4. Sahulkaneer. |
| 5. Bajkaneer, | .. | | 5. Sahutranee. |
| 6. Buhulkaneer, | | | |
| 7. Dahaneer, | | | |
| 8. Japie, | | | |
| 9. Bukeraneer, | | | |
| 10. Chohilaneer, | | | |

- | | | | |
|--------------------|---|--|-------------|
| 11. Tighanee, | | | |
| 12. Soondranee, .. | $\left\{ \begin{array}{l} 1. \text{ Loolwee.} \\ 2. \text{ Arbaee.} \\ 3. \text{ Jageranee.} \end{array} \right.$ | | |
| 13. Sooranee, | | $\left\{ \begin{array}{l} 1. \text{ Subzye.} \\ 2. \text{ Golao.} \\ 3. \text{ Bungwahl.} \end{array} \right.$ | |
| 14. Bujranee, .. | | | 4. Ruhazye. |

Principal Town, Trull.

No. 4.

The Jummallees, a poor, and not numerous tribe of Beloochees, cultivate and feed flocks at Rajhan, and other places along the southern edge of the Bunhooree desert; they have also villages in Cutchee.

The Jummaltees are robbers ; and have been associated with the Jekranees. The tribe is subdivided as follows. Their chief, *Lusker Khan*, of *Rajhan* :—

- | | |
|----------------|---|
| 1. Rundanee, | 3. Dusktee, |
| 2. Moondranee. | 4. Shirkananee, (the chief is of this tribe.) |

No. 5.

The Khyberries affect to be Sheikhs originally from Affghanistan ;
 Tribe of Khy- their sacred character, however, did not protect
 berries. them from the lawless Doomkie and Jekranie
 tribes, who drove them from their lands and villages, on the other side
 of the desert, and obliged them to seek for refuge at Khanpore, about
 eight miles westward of Shikarpoor. The Khyberries muster about 800
 men, and are a peaceable tribe ; they have no subdivisions.

No. 6.

A Beloochee tribe, cultivators and feeders of flocks at Manewtie, and in the direction of Kunda, not numerous or powerful, having been much oppressed by the predatory tribes. The Oomranee have eleven subdivisions.

- | | |
|-----------------|--------------------|
| 1. Tungeancee, | 7. Pulleeancee, |
| 2. Barrachanee, | 8. Jungheekhanzye. |
| 3. Ghumeancee, | 9. Sazuzye, |
| 4. Ferozancee, | 10. Rindanee, |
| 5. Belancee, | 11. Muzarancee. |
| 6. Mulghancee, | |

No. 7.

This is a Scindee tribe, scattered over a large tract of country, and occupied entirely as cultivators, and rearers of cattle.

Tribe of Jutts.

Some of the Jutts, the *Beyahs* for instance, are wealthy and powerful as zemindars, but the tribe is for the most part composed of a poor and wandering class, who occupy moveable habitations, and lead an unsettled life, shifting their positions as forage and water may render necessary. The Jutts are peaceable themselves, but exposed to the constant violence of the predatory tribes in Upper Sindh; under a vigorous and protecting Government, they would become useful subjects; at present, immense tracts of country formerly cultivated by them, are lying waste

Subdivisions of the Jutts,—

- | | |
|--------------------------------|-----------------------|
| 1. Beyah, (the most powerful,) | 12. Lodruh, |
| 2. Sudayeh, | 13. Kooharah, |
| 3. Buthoond, | 14. Wuggun, |
| 4. Deyah, | 15. Tihern, |
| 5. Kuhahpeotrah, | 16. Gomu. |
| 6. Bookujaut. | 17. Purvur, |
| 7. Surkee, | 18. Sutarh, |
| 8. Durodgurt, | 19. Mehri, |
| 9. Oomur, | 20. Bungah, (Cutchu,) |
| 10. Joonejhur, | 21. Budanee, |
| 11. Marafanee, | 22. Kalkee. |

There are other subdivisions, but the above are those located in Upper Sindh.

No. 8.

A numerous, and essentially predatory tribe, inhabiting the hills to the northward of the Bershoree desert. Their capital and stronghold is Deerah, sixty miles eastward from Phoolajee. There are fifteen subdivisions of this tribe,

Tribe of Boogtie
Beloochees.

and they are said to muster about 3,000 men, principally foot. The chief, Beburuck; eldest son, Ahmed Khan; second son, Islam Khan.

Subdivisions.

- | | |
|---------------------|-----------------------|
| 1. Rarjah, (Chief.) | 9. Notanee Ferozanee, |
| 2. Kulpur, | 10. Notanee Durruk, |
| 3. Mussoorie, | 11. Soondeeanee, |
| 4. Noakanee, | 12. Rumazye, |
| 5. Moondraanee, | 13. Soorkurrec, |
| 6. Keyazye, | 14. Phong, |
| 7. Shumbranee, | 15. Chundrazye. |
| 8. Seydane, | |

No. 9.

Though not numerous, the Jekraanees were the most active and formidable of the marauding tribes, and were for many years the terror of the whole line of country lying between the Indus and the great defile of the Bolan. Their former capital was Chuttur. With the advantage of having an asylum in the Boogtie hills, they shared plunder with that tribe, in consideration of the shelter afforded them. Chiefs, Durya Othun and Turk Allie; all mounted men.

Nine Subdivisions.

- | | |
|-----------------------|-----------------|
| 1. Subwance, (Chief.) | 6. Soolkane, |
| 2. Majanee, | 7. Moolkane, |
| 3. Seeapaz, | 8. Kurrookanee, |
| 4. Sooramanee, | 9. Durkane. |
| 5. Nodkane, | |

No. 10.

Mustering about as many men as the Jekraanees, with whom they were linked as plunderers. The Doomkie chief, Bejai Khan, was the acknowledged leader of both tribes, and had his stronghold at Phoolajee, commanding the great Pass to Dcerah and the Boogtie hills; Bejar Khan has one son, Wuzzeer Khan.

Thirteen Subdivisions.

- | | |
|-----------------------|-----------------|
| 1. Meerozye, (Chief.) | 8. Kurkkorie, |
| 2. Muhamedanee, | 9. Talanee, |
| 3. Brahmanee, | 10. Loondh, |
| 4. Baghdar, | 11. Seenghanee, |
| 5. Shubkhar. | 12. Guzyanee, |
| 6. Deenaree, | 13. Wuzeranee. |
| 7. Gongee, | |

No. 11.

This tribe of Beloochees is considered to be the most numerous and powerful of any below the Bolan Pass. They Murree Belooches. inhabit the northern portion of the range of hills bordering Cutchee to the West and North, called after the two tribes, "the Murree and Boogtie hills," though a spur of the Sullimani range. The Murrees are essentially predatory and warlike; their depredations extending to Bagh, Gundava, and the whole of Cutchee, with the Bolan Pass, and Hummund and Dajel in the Seikh territories. The Murree chief, Dodah Khan, has his stronghold at Kahan, a respectably sized fort, situated in a well watered plain, of about six miles in its greatest extent, and exceedingly productive; particularly in wheat. Kahan is distant about sixty miles in a North-westerly direction from Phoolajee, passing through defiles, and therefore much exposed to annoyance from an enemy. Kahan is the only fortified place which the Murrees possess in the hills; but there are other strong positions well supplied with forage and water, to which they betake themselves when driven from the fort. The Murree country is well supplied with running streams, and its villages are exceedingly productive. The climate, in consequence of its elevation, is much milder than that of the plains, the thermometer averaging for the month of June 1840, the maximum 97°, and at 8 P. M. 85°;* rain is of frequent occurrence; roads pass through the Murree country to Hummund, Dajel, Rozan, Dera Ghazee Khan, and Mooltan, and are traversed by merchants, bringing goods from thence to Cutchee, Gundava, Bagh, and other places, in that direction, on which black mail was of course levied. The Murrees, like other hill

* At Lehree and Phoolajee in the plains, the thermometer during the same month stood at 120° in a tent.

tribes, though nominally tributary to the Khanate of Kelat, have ever affected independence, and tribute was rarely, if ever, exacted.

The Murrees have subdivisions as follows:—

- | | |
|----------------------------|------------------|
| 1. Guznanee, (the Chief | 8. Roonganee, |
| is of this sub-division,) | 9. Soomranee, |
| 2. Beejaranee, (Dukel | 10. Koomgaranee, |
| Khan,) | 11. Pommoaddee, |
| 3. Lallwanee, (Lall Khan,) | 12. Soolwanee, |
| 4. Seealkosh, | 13. Shajoo, |
| 5. Bundeeganee, | 14. Soheranee, |
| 6. Madanee, | 15. Sheranee, |
| 7. Ballaree, | 16. Moomdanee. |

The Murrees may amount to between 2 and 3,000 fighting men, of whom 3 or 400 only are mounted; the country they inhabit, being unfavourable to Cavalry.

1. The preceding are the tribes inhabiting the line of country

General Observa-
tions.

between Sukkur and Lehree in Northern Cutchee, as also the hills to the north and west of the latter.

Beyond Lehree, there are also the following Affghan and Pattan tribes skirting the hills, and in the low country, between Lehree and Dadur: the Khujucks, a large tribe, are at Sibbee, to the westward of the latter place.

1. Shadozye, (Affghans.)
2. Sheeroone. „
3. Buzdar, „
4. Kutrians, (Chief, Meer Hujee.)
5. Dunums, }
6. Loonee. } Pattans.

From Brushoree, northward and westward to the Bolan and Gundava Passes, are the tribes of *Rinds*, *Abnahs*, and *Mughsus*; only the former of these are Beloochees. The two latter are Jutts. The *Rind* Beloochees claim precedence over all the Beloochee tribes, and are said to have formerly possessed the greater portion of the country on this side of the Brushoree Desert, now subdivided amongst the various tribes enumerated; they are now, however, but few in number, and have their locality at Shorunr near Bagh, under the Chiefs Sirdah Khan, and his son Shah Allie.

2. Of the preceding tribes, the Khosahs, Juthooes, Jumallees, and Boordies, are subjects of the Sindh Government; but the tribes inhabiting the country northward of the Brushoree Desert, were until the late establishment of H. M. Shah Shoojah's authority, tributary to the Khan of Khelat.

The Doomkies and Jekranees, formerly the most lawless and predatory of the tribes inhabiting the plains, are now peaceably settled as cultivators, many of them being enlisted for police duties in Northern Cutchee, whilst the lands which they usurped from the Kyberrië tribe, have been returned to their lawful owners, and others assigned for the subsistence of the two tribes alluded to.

3. The cultivating classes of Beloochees and Sindhees, such as the Khosahs and Jutts, were constantly exposed to harassing forays, and thus the former, finding no security for life or property, left the tracts of country which they formerly cultivated in Northern Cutchee, and confined themselves to this side of the Desert. A better system of things, has, however, induced many of the Khosahs to return to Lehree, and the neighbourhood of Shapore.

4. The Beloochees, as seen in Upper Sindh and Northern Cutchee, are a large muscular race, particularly the hill tribes of Murrees and Boogties. Their features are large, and decidedly Jewish, while the custom of allowing the hair to grow to a considerable length, depending over the shoulders and falling wildly on the forehead, (a very uncommon habit among Mohammedans,) imparts to the Beloochee's countenance, a remarkably ferocious expression.

5. The Beloochees, who may be considered as foreigners in Sindh, possess an unwritten dialect peculiar to themselves, apparently mixed up considerably with both Pushtoo and Persian.

6. The character given by the neighbouring people to the Beloochees, is proverbially bad,* and there is every reason to believe it to be not unmerited. The predatory habits of the Beloochee, seem not to have been forced upon him by circumstances of necessity,

* The term Beloochee, or as it is spelt in the language of the country *Baloche*, is thus analyzed:—

B.	<i>bud</i> ,	bad,
C.	<i>luhee</i> ,	covetous, (Sindee.)
W.		wild, unsettled.
Ch.	<i>chor</i> ,	a robber

since the country he inhabits, possesses capabilities of no ordinary kind, but rather from a natural propensity to lawless practices.

The Beloochees are vindictive, treacherous, and cruel. In their feuds, they hold no terms but blood for blood, and while committing their depredations, spare neither age nor sex.

7. As may be expected from a totally ignorant people, uninformed on all but the merely external observances of the Mahomedan religion, the Beloochees are to the highest degree superstitious. The office of a Syud is so much respected by them, that he forms the only security for the faith of tribes towards each other, and is himself the only individual whose life is safe in the hands of a Beloochee

8. Unrestrained in these countries, as the Beloochee tribes have been, in consequence of the lax nature of the Governments, they are not now disposed to yield willing submission to new systems of controul, calculated to check the long established freedom of their lawless habits, and compel them to the acknowledgement of a regulated authority.

9. The Beloochee tribe of Northern Cutchee, have ever been more dependent upon plunder than cultivation, which seems in accordance with their habits of idleness and dissipation. With the produce of the country at his disposal, it was scarcely probable, that the wild and lawless Beloochee would settle as a quiet agriculturist, consequently the small portion of these tribes who come under the denomination of "cultivating classes," are usually found to be the dependents or slaves* of influential chiefs.

10. In Boordekur, and other portions of the country to the southward of the Burshoree desert, the Beloochees being of a less decidedly predatory class, cultivate more extensively than those above mentioned.

The restraint which good government will impose on these tribes, with the aid of patient encouragement to peaceful occupation, must in time effect a reform in their habits and practices. The general character of the country they inhabit, as one possessing capabilities of great fertility,† is in every way favorable to the object in view,

* Slavery obtains amongst the Belooche tribes, children being bought and sold or exchanged, for goods in kind.

† The effects of the inundations of the Indus extend to the vicinity of Rajhan; all the intermediate country being as capable of fertility as any part of the rest, and

and there can be little doubt eventually, but that these semi-barbarous tribes will afford a proof of the radical change, which a just but energetic system of rule may effect in a country, and the condition of its inhabitants.

SHAWL.

The district of Shawl is situated between $29^{\circ} 50'$, $30^{\circ} 50'$, and $66^{\circ} 4'$, $67^{\circ} 20'$.

This district is bounded on the North by the Tukatoo mountains ; East by those of Zurgoon and Jhurkoo ; West by Chuhul-tun ; South by the Bolan range. The general aspect of this country is hilly, rocky and sterile, particularly the southern aspects ; but where mould exists, which is the case on many of the northern faces, vegetation is luxuriant. Many of the hills are composed of mica and talk ; coal of an inferior description is found in the Bolan Pass.

The soil in the valleys is rich and of a light brown colour, and although water never reaches many of them, save that which falls from the heavens, the southernwood and many other sweet-smelling herbs grow luxuriantly, and in spring flowers of various descriptions carpet the vallies. The soil generally is well adapted to all descriptions of horticulture and agriculture, particularly all kinds of English vegetables. The greater portion of the valleys lay waste in consequence of no water being procurable for irrigation, but here and there small patches are to be seen, which entirely depend on rain for coming to maturity. In these valleys, the artesian wells might

when cultivated, wonderfully productive. To the north of the Burshoree desert, the river *Narie* to the west, and abundance of water found at a short distance from the surface in the Eastern part of Cutchee, offer every facility for irrigation and cultivation. The jawarree is principally cultivated in the plains, and wheat on the hilly country, the crops are unusually rich.

Note.—One tribe has been omitted in the foregoing paper ; viz. that of Mugherie, having their locality to the South of Wagh, at Jullah Khan ; Chief, Ghullam Nubbee.

Sub-divisions.

- | | |
|-----------------|-------------|
| 1. Hajeizye. | } Beloches. |
| 2. Bumbeeranee. | |
| 3 Bhund. | |
| 4 Arbanee | |

be adopted with success. That which is termed the valley of Shawl, is at an elevation of about 5,500 feet above the level of the sea, and has advantages over most of the surrounding country, being in most parts abundantly supplied with water from small mountain streams; and that part which is under cultivation, produces very rich and beautiful crops.

There are no large rivers, but one or two considerable streams,
 Rivers. the chief of which is the Sosa, into which most of the inferior streams empty themselves.

The year may be considered to be divided into four seasons: spring,
 Climate. which commences in March and lasts till May, during which time the thermometer ranges 70°, lowest 50°; summer, from June to August, range of thermometer, highest 80°, lowest 76°; autumn from September to November, range of thermometer, highest 60°, lowest 40°; winter, from December to February, range of thermometer, highest 50°, lowest 30°. The prevailing winds are westerly and southerly, and always cool; a good deal of snow falls in the valley in January and February.

The population of Shawl may be estimated at about 4,000 men, a
 Population. third of whom are Kasees, (or cultivators of the soil,) 2,000 may be reckoned as Afghan Kakurs, and the remainder as mixed tribes, including the Hindoos of the town of Quetta.

Wild Animals. The hills of this district abound with wild sheep, goats, and hogs.

A great variety of English plants are found, and a variety of
 Plants. English trees, shrubs, and herbs are to be found, such as cherry, almond, hawthorn, barberry, &c. &c. Also the juniper, which grows to the height of from eighteen to thirty feet. Within eight miles of Quetta, there is a forest of this description on a piece of table land, affording an inexhaustible source of fire wood, as also rafters for building. The wood of this tree is exactly similar to that used in cedar pencils, and the scent equally aromatic. The assafoetida grows in abundance in these hills. The orchards in the vicinity of the town and villages are very beautiful, composed of apricots, mulberry, greengages, plum, pear, apple, pomegranate, &c. interspersed with a variety of other trees, such as the

poplar, willow, may, &c. The fruits though good, are not equal to those of Candahar and Cabool.

Minerals. Iron is found in some parts of the district.

The chief agricultural produce is wheat, barley, mukah, (or

Agriculture. Indian corn,) rice, peas, lucerne, mujeed, (or madder,) carrots, baugluns, spinnage, cucumbers, pumpkins and melons.

Implements of Agriculture. Common small Indian plough, spade, and hoe.

No wheeled carriages.

Manure. Dung of cattle, burnt stubble, and black earth from the town.

Good sized bullocks for carriage and draught, camels, and sheep in

Domestic Animals. abundance.

It produces madder, wool, carpets, blankets, and numdars or felts ;

Commerce and Manufactures. madder and wool are the only two articles exported, and those inconsiderable, in consequence of the

great consumption in the country, their habitations being chiefly also of blanket ; thin grain-bags and tapes are made from the wool, the staple of which is eight inches, but coarse. The whole of the inhabitants are clothed in numdah cloaks, &c. The revenue of Shawl at present, does not exceed 24,000 Rupees per annum.

Various Routes in Scinde from official documents from Bombay, of March 1840, communicated by the Government of India.

Route from Sehwan to Kurrachee direct, Quarter Master General's Office, Camp Kurrachee, 12th February, 1840.

Sehwan to Roree, eleven miles and half a furlong. From the gardens

Tarrae a middling village, is passed at four and a quarter miles, and Cuchee, Bajar, and Jangur, three large villages, from two to three miles distant, on the right bank, about nine miles from Sehwan. Forage was got by the grass-cutters, above Aree Peer, also kurbay to purchase.

south of the town, near the river, two small chopped villages, with some cultivation and three wells ; a nullah was found with a good supply of water, about one mile on the S. W. of the village. A small stream runs through Aree Peer, about a mile and a quarter to the westward, and a good supply of water always to be found one mile further, in the same direction, in the bed of the river ; the road is very good over a level plain.

Warkee river, near its junction with Chorla river.—The Warkee river is small, and joins the Chorla river about half mile on the right, near which there is a pool of water, at the foot of a rock, which terminates Loond hill, and which lasts all the year. Warkee camp appears to be the usual halting place, and had more grass about it than where the dragoons encamped; there are two roads which separate at the place where the Dheeng river is crossed about four miles from Roree, one running on each side of Loond hill and meeting again one mile in front of Warkee; the road running to the right of Loond hill, along the Chorla river, is longer, but reported better. The halting place by it is called Chorla Mukam, near some ancient tombs, where there were also fine pools of water in the river. The other road is more stony, as it crosses the Dheeng river two or three times. Camp at the Mulleeree river, ten miles. Some good pools of water stated to last all the year. Forage scarce, but procurable by grasscutters about the river and on the hills on the right; the ranges of hills on each side approach much closer, and at four miles the road enters the defile of the Joorung river, and continues along its bed and banks for about three miles very rough and heavy, and some rocky nullahs afterwards are crossed before reaching the camp, on Pokrun river, twelve miles and three and a half furlongs. Extensive pieces of deep water, and a small stream running. There is no village seen since leaving Roree, though some of the shepherds of the country brought in some goats here; there is a good deal of thinly scattered jungle amongst which the shepherds' huts are located. The road continues to ascend slightly until the fifth mile, crossing four or five rocky nullahs running into Mulleeree river; it is then better with a slight descent, and crosses some nullahs running southward into the Pokrun river. Forage more plentiful, but procured in the same manner by the grass-cutters, about the river banks.

Kajoor camp on the Kajoor river, nine miles and four and a half furlongs.—Good pools of water. This is the same river with the Pokrun, but the forage not so plentiful; the road is pretty good in general, crossing the river at the sixth mile; at the eighth mile it is confined between the hills and the river for a short distance, where it is rocky, and crosses the river again, to camp; roads run off here, and about

midway to Moohun Kote, a fort of the Ameers, beyond the hills on the left.

Doobah camp on the Doobah river, eight miles and two furlongs.—Good pools of water on the same river, here called the Doobah. Forage as above. The road is pretty good all the way, through thin jungle, crossing ten or eleven nullahs, some of which are considerable.

Murraie Mukam on the Murraie river, nine miles and three and a half furlongs.—Water in the sandy bed of a broad river. Ahmed Khan's Tana, a large village with good supply, is about two miles S. W. further up the river; it is the residence of the soobadar of the district; two other small villages lie between it and the road called Mahomed Khan and Jansir, but neither have any supplies. There are two roads here, one running on each side of a low range of hills; that to the left is the usual route, and the halting place at Meer Khan Tanna, a village with two or three shops, and is also on the bank of the Murraie river with water from pits in its sandy bed. The guides brought the detachment by the other road, as having more water; and on account of its being nearer the large village of Ahmed Khan, the road pretty good.

Dumajee, nine miles and six and a half furlongs.—A small village of about twenty choppered huts, and a few Banian supplies; water from two wells, and a pool of rain water in the bed of the river, all of which were exhausted and found insufficient for the detachment, and part of the camels were not watered. Forage more plentiful, but some distance on the plain to the front and rear of the stage by the road; the road pretty good.

Trak Mukam at Trak river, nine miles and three and a half furlongs.—The Trak river is crossed at nine and a quarter miles, and water is found in its bed at all seasons, about two miles on the left at the base of the hills, through which it passes to the Southward. The distance is not increased by going to this point, though so far off the beaten camel road, and paths go direct to, and from it, before reaching the river. Forage abundant, and the road good through jungle, and some cultivation at the fourth mile.

Bhoot Camp, two miles and seven and a half furlongs.—A place

The roads to Je- at the Huttul-ke-Bhool hills, where a nullah
rakh and Hyderabad contains a good supply of water from the late rains,
cross here. with plenty of forage; country covered with thin

jungle and grass, but Trak should be the halting place, making Kuttajee the next stage.

Kuttajee Mukam at Kuttajee river, twelve miles and three furlongs.—The river about six furlongs on right, has good pools of water, which never fail, especially at the base of the hills here, where it passes through the range to the S. W. Forage as above; the road is in general good, excepting where it crosses some nullahs, and is a little confined between the river and some low hills on left at the eighth and ninth miles, where it is stony, then good, through jungle bushes to Kuttajee.

Goorban Camp at Goorban River, six miles and four furlongs.

This long march was made from an expectation that from not having gone off the road to Trak, a distance of from three to four miles had been saved, which was not the case as it proved. The confluence of the Gorban and Kuttajee rivers, both having small running streams and large pieces of standing water; forage not so plentiful, the road at two miles from Kuttajee has a slight but stony ascent, at the top of which the Gohar tullao occurs, at present filled with rain water. At three and a half miles, a rocky ghaut or defile commences, and continues an easy descent passable for guns; but, being most of it bare rock, is rough; it crosses two stony nullahs, at the bottom; at four miles some more rising ground is passed from the nullah, when the road is good again along the Kuttajee river to camp, crossing the river at the junction.

Dumba Camp, ten miles and two furlongs,—is on the Dumba river, which had good pools and a small stream of water running. Forage is procurable by the grass-cutters in considerable quantities about Dumba, but more plentifully a few miles before reaching it; the road is in general good, and passes Peepulwaree river and Mukam at six and a quarter miles, which has water in some small wells at present dug in its bed, and a good deal of short grass and thin jungle.

Camp Kurrachee to the lines of the Grenadier Regiment by the high road, seventeen miles and one and a half furlong —This road is that generally travelled, and is longer than that by Dozan about one mile, but stated to be much better; the first thirteen miles being over an extensive level plain, in most parts thin jungle, but, a good well beaten track; at nine and a half miles Reekee Koree and two huts are passed,

on the left, but the well is small. Amree nullah, at present containing pools of water from the late rain, is passed at ten miles; at thirteen miles the road runs through some rocky ridges and uneven hard ground, passing a pool of salt water at thirteen and a half miles on the left, and is then good to camp. Kurrachee town two miles. Total 146 miles and one furlong.

(Signed) N. CAMPBELL, Major,
Acting Quarter Master General of the Army.

Reconnaissance of the Route from Tatta to Kurrachee, January, 1839.

The distances stated were those given by the perambulator. The sketches as far as Gorah were taken in the direction of that place, laid down in the protracted route of Lieut. Maxfield, but were afterwards filled in from the distances by perambulator, and by a few bearings taken in the general directions, and to remarkable objects on the right or left of the road. No detailed survey was attempted, and these are merely intended to give an idea of the character and direction of each day's march.

From the Hill above the Camp to Googah.

One mile.—A dry nulla with deep sides, which would require to be cut down. The road to this descends the hill by a very easy slope covered with milk bush. The road is stony, and winds a good deal among the bushes. Several baubul trees grow about the nulla or canal, and it is bordered by a few bushes. The country, after crossing the canal, opens out into a plain, over which the road is very good.

Two miles and two furlongs.—Enter a tamarisk jungle; a very indifferent field of wheat on the right; a flock of sheep seen grazing.

Two miles and six furlongs.—Cross a dry canal. A well of good water with a wheel worked by bullocks, the water is not very plentiful, but it produces a little cultivation; steps are made to descend into the well, and considerable care appears to have been bestowed upon it. Some bundles of jowaree seen near the road. The country with low jungle, but presenting no obstructions.

Four miles and two furlongs.—Bed of a river, or canal, covered with coarse grass.

Five miles and six furlongs.—Road up to this over an open plain, but now passes for a short distance through a low jungle, but not thick ; low rocky hills immediately on the left.

Six miles and six furlongs.—Enter a low jungle, the road a little cut up, a village about one and a half mile to the right. Country, a plain covered with low jungle.

Seven miles and four furlongs.—Road a good deal cut up here, and through a low tamarisk jungle ; soil sandy, but generally hard.

Seven miles and seven furlongs.—Pass a small canal, about four feet deep, and the road then runs along a kind of bund. The country is covered on both sides to a considerable distance with coarse grass. Herds of cattle and several tattoos seen grazing.

Eight miles and one furlong.—Leave the bund and cross a small canal. The road along the bund is by no means good. Country here has the appearance of having been divided into fields, and also of being marshy in wet weather.

Eight miles and two furlongs.—Pass the bed of a river, the banks to the right very steep, bed hard at present ; pools of water.

Eight miles and four furlongs.—Village of Googah.

Eight miles and seven furlongs.—A bund across the river.

The village of Googah is of rather respectable appearance, and may contain about 200 houses. The water is obtained from pools in the bed of the river, which are at present about two and a half feet deep. The river at the bund is forty paces wide. Above the bund, there is also a pool, and wells have been dug, but the supply by this means appears by no means plentiful. The water is drawn in several places by wheels, from wells communicating with the river. A field of sugar cane was observed on the banks of the river, and there are some clumps of fine baubul trees. The ground about the village is covered in most places with a low jungle, especially between it and the river. The site of the village is very slightly raised. An oil-mill was seen at work, and between twenty and thirty camels counted in the vicinity. No supplies of grain were procurable, and the coarse grass is the only forage.

From Googah to Garah, commencing at the Bund.

One furlong.—Cross the bed of a canal, about fifteen paces wide, with very steep banks, and the earth heaped up on the sides, making it from ten to fifteen feet deep. There is also a small ditch, and the whole would require a good deal of work to render the road passable for guns.

Five furlongs.—Road good over a level country, partially covered with grass and jungle, low hills about a mile to the left.

Seven furlongs.—A small canal, country to the right covered with coarse grass, upon which herds of cattle were grazing. On the left, a tamarisk jungle, but by no means thick.

One mile and one furlong.—Jungle for a short distance, and road somewhat cut up, but soon becomes hard and good over a level plain, on which low bushes are scattered. Herds of camels, principally females, with young ones, seen grazing.

Three miles.—A canal dry, with a little grass on its banks.

Five miles.—A dry ditch. Road continues hard and good.

Five miles and one furlong.—A dry ditch, road enters a jungle, which requires clearing.

Five miles and four furlongs.—Descend into the dry sandy bed of a river, along which the road runs for about two and half furlongs. A branch joins from the left, in which there is a pool of bad water. The bed of the river is about twenty paces broad. Banks not very steep, but a good deal broken and covered with jungle. On leaving the bed of the river, the road runs for a mile over wreaths of fine loose sand, into which horses sink very much, and which would be almost, not quite, impassable for guns. A few bushes are scattered upon the surface.

Seven miles and seven furlongs.—Road enters a jungle, and is pretty good.

Eight miles.—A small dry canal, road hard and good. Country continues a plain, covered with low jungles.

Eight miles and one furlong.—Descend into the bed of a river, the banks are covered with jungle, which does not however extend far.

Eight miles and five furlongs.—A dry canal, road a little broken, but in general hard and good.

Ten miles and five furlongs.—Dry rocky bed of a torrent flowing from some low hills, on the right. The Garrah creek close on the left, water salt.

Eleven miles and three furlongs.—Road descends into the bed of the creek, and runs along the edge about three furlongs; it then passes through a rocky opening, and approaches the village of Garrah. The country appears quite a desert, sand hills crowned with low jungle, and no appearance of cultivation. During the whole march no travellers of any kind were seen, and the guide apparently left the road of the mission, and took a short cut across the country. Two wells mentioned in Captain Maxfield's route were not seen.

Twelve miles and eleven furlongs.—Garrah contains about 300 houses and fifteen or twenty banyan's shops; gram, bajeree and wheat are procurable, and also forage brought from Mulleer. The water is supplied from wells within some enclosures, about three furlongs to the right of the village; but is by no means good, five were counted. They are about six feet deep, from two to five feet in diameter, and have about one and a quarter feet of water, consequently could only be sufficient for a very small body of men; no other water could be found in the vicinity. The creek is navigated by small boats; it is nearly dry at low water, but it is said to be ten or fifteen feet deep at high water spring tides. Large boats are now prohibited sailing from Garrah. Kurrachee may be reached by water in two days. The gram and wheat sold in Garrah is said to be brought from Sehwan, it is in itself utterly destitute of all supplies, being situated in a desert.

From Garrah to Peeprée River.

One mile.—Dry bed of a river, road hard and good, but winding among hillocks of sand covered with low bushes, some low hills on the right near the road.

Two miles and four furlongs.—Road up to this very good, but is here a little broken; country, sand hills covered with low bushes.

Two miles and seven furlongs.—A slight rise in the country, which is covered with milk bushes, road good.

Three miles and four furlongs.—Bumthora on the left, about quarter of a mile distant. Bumthora is a low hill covered with milk bushes, and can hardly be distinguished in coming from Garrah, from the ground

on that side being itself a little raised above the plain. Its appearance is somewhat of this description ; road good, but a little stony ; water is said to be procurable at Bumbhora.

Three miles, and five furlongs.—Milk bush ends here.

Four miles and one furlong.—Pass some low hills and a little tamarisk jungle, open sandy plain on the left, road excellent ; two ruins on the plain to the left.

Five miles and four furlongs.—Road over a firm sandy desert, jungle on the right, dry bed of a river in which water is said to be procurable by digging.

Five miles and five furlongs.—Pools of salt water on the right, road along the edge of undulating ground covered with milk bush.

Six miles.—Road passes over some undulating ground scattered with milk bush and tamarisk, but is hard and good ; saltwater pools to the right.

Six miles and four furlongs.—Low undulating hills upon right of road, and a long narrow patch of swampy looking ground on the left covered with long grass ; road good, low jungle on the left.

Nine miles and four furlongs.—Wattanjee Landhee.—The road up to this runs along what has the appearance of having been a sea beach ; the country to the left being an open plain, as far as the eye can reach, covered in some places by low jungle, and on the right, low hills which sink down abruptly to the plain ; the road is in general excellent, except where it is sandy and heavy, across what resembles the mouths of rivers ; of these there are four or five, from 100 to 250 yards across. Wattanjee Landhee is situated in an opening of this kind. The caravanseraï is in good repair, and there is a well of good water, ten feet deep and nine in diameter, with two feet of water. It is drawn by a wheel, and there is a small garden. On leaving Landhee, the road crosses some heavy sandy ground, but is afterwards very good.

Twelve miles and one furlong.—Garrah creek on left of the road about eighty yards across, with apparently deep water, is very winding in its course. The road up to this runs across two bays, the hills receding a little, about a quarter of a mile, in the centre of each, in the last they became regular sand cliffs. The road is excellent in the first, but a little cut up in the second. The low hill, Bhader or Shasher, is on the

left, and composes part of a low range. Road now leaves the low ground, and ascends a gentle slope, but is hard and good.

Twelve miles and three furlongs.—Cross a dry nulla, road sandy but good, over an undulating country covered with milk bush, and quite a desert.

Thirteen miles and five furlongs.—Cross a dry nulla with broken banks, country as before.

Fourteen miles and two furlongs.—Sandy bed of a river, ground undulating, road pretty good.

Fourteen miles, and five furlongs.—Peepree river and ruined caravanseraï. The river is from thirty to fifty yards wide, banks broken, rocky bed filled with sand, three wells of pretty good water, largest eleven feet deep, four in diameter, with thirteen inches of water. The soil is a stiff sand. The other wells are smaller, one is quite dry; six cattle and four buffaloes seen watering here. Country a complete desert, with scattered milk bushes. No travellers of any kind seen this march, but the road is well defined throughout; a flock of goats seen near Wattangee Landhee.

From Peepree River to Shurabee, a village in the Mulleer district.

Four furlongs.—Road very much cut up; on the right bank of the Peepree river deep and sandy, country desert, and scattered with milk bush.

Seven furlongs.—Small open plain to the right, country to the left undulating, and covered with milk bush, road hard and good.

Two miles and three furlongs.—Sandy bed of a river about fifty yards wide, left bank much broken by ravines and precipitous, descent very bad, ascent on right bank easy: road up to this good, country desert, scattered with milk bush and low thorns.

Three miles.—Sandy bed of a river, about forty yards wide. Banks precipitous, from ten to fifteen feet high, descent on left bank very bad. A ravine runs on the right bank, for about a furlong on the immediate right of the road. Country desert, undulating, scattered with milk bush, road hard and generally good.

Five miles and seven furlongs.—Sandy bed of a river about thirty yards wide, banks precipitous and broken; road good and hard.

Six miles and two furlongs.—Dry sandy nulla, four yards wide, banks perpendicular, about four feet high.

Six miles and seven furlongs.—Tombs of the Jams on the right, about two miles distant.

Seven miles and one furlong.—Road diverges to the right from that to Hadjee Oomer-ka-Landee, and lose sight of the long extent of flat country, which is seen on the left over the undulating ground bounding the horizon since leaving the Peepree river. Country desert, undulating, and scattered with milk bush.

Seven miles and seven furlongs —Descend into a vast plain, bounded by lofty mountains in the distance. Country open near, but a good deal of jungle in the distance.

Eight miles.—Hadjhee Oomur-ka-Landhee about a mile to the left.

Eight miles and four furlongs.—A small red tomb to the right.

Eight miles and seven furlongs —Country a good deal broken, but road hard ; milk bush scattered about the Mulleer river. About 150 yards to the right, abundance of good water in pools, bed in other places covered with grass, banks sloping, covered generally with high and thick tamarisk jungle.

Nine miles and four furlongs—River turns to the right, road pretty good, but in places sandy, and cut up. Country an undulating sandy plain, with low bushes scattered about upon it.

Ten miles and one furlong.—Well of good water on the right, about eight feet deep, and supply pretty good ; some little cultivation, open plain to right with jungle in the distance. Country broken, undulating, and covered with milk bush to the left.

Twelve miles and four furlongs.—A small village, with an indifferent well on the right. A little grain procurable, but no forage.

Thirteen miles and seven furlongs.—Village of Shurabee about half a mile to the right of the road, with a small well. Country level, covered with low bushes and some baubul trees, a scanty herbage of coarse grass, affording pasturage for flocks of pretty good sheep. Camels also seen grazing in the vicinity. The village itself is merely a few miserable huts, but there are some attempts at enclosures about it. Grain is procurable in small quantities, and also a little forage. A few travellers were met during this day's march.

From Shurabee to Kurrachee.

One mile and one furlong.—Jungle pretty thick, road sandy, and cut up into deep ruts; coarse grass among the jungle.

Two miles and four furlongs.—Bed of Mulleer river, water procurable by digging to the depth of a few feet, bed 250 yards wide, deep and sandy, banks sloping, descent on left bank very deep, and heavy. Road runs through a thick belt of jungle on the right bank.

Three miles and four furlongs.—Bed of a river, hard and sandy, banks sloping covered with jungle, and a good deal cut up.

Four miles.—Bed of a river with low banks, jungle opens

Four miles and five furlongs.—Bed of a river about 300 yards wide, of deep sand, banks easy, and sloping. Country becomes more open and undulating; road hard and good.

Five miles and five furlongs.—A precipitous bank on the immediate right of the road, for about a mile; road hard and good.

Seven miles and one furlong.—Road enters upon Kurrachee plain, after passing over a range of rising ground, with steep hills; but of no very great elevation. Road hard and good; some tombs upon the left. Kurrachee, Mumora fort, and the rocky islands at the mouth of the harbour come into sight at this point.

Nine miles and one furlong.—Fuqueer's tank near the town of Kurrachee, road over a level plain, hard and good. No cultivation seen during this march, and no travellers. Kurrachee is a large town, stated to contain about 14,000 inhabitants, (Lieut. Carless' report,) and is surrounded by a mud wall, with towers, which is, however, now in ruins. A few old guns are still visible. The suburbs are extensive, water by no means very abundant. The Fuqueer's tank is nearly dry, and the water used by the inhabitants is procured from wells dug in the bed of the Lyaree river. These are in general about four or five feet deep, and appear to be temporary, but one was observed built up in the middle of the river, and there are others near the banks, for the use of the gardens, which appear to be pretty well kept up; no cattle were seen near the town, and it is said that few or no horses are kept; grain is pretty abundant, brought from Upper Sindh; but at present very dear. Forage is extremely scarce, and dear. The general communication appears to be by camels direct

to Hydrabad. Mumora fort, commanding the mouth of the harbour, is about five miles distant, in a straight line, and a long detour is necessary to reach it by land. The usual garrison of Kurrachee is stated to be from 100 to 200 men. The whole of this part of the country is now suffering from two years' want of rain, which has converted it into little better than a desert. In general, the country about Kurrachee and in the Mulleer district abounds in water and fine grass. Mumora fort is supplied with water from the town.

Kurrachee to Ghor-ka-Landhee.

Two miles and two furlongs.—Begins to ascend a gentle slope to the ridge of elevated ground, tombs on the immediate right.

Two miles and four furlongs.—A steep rocky hill on right.

Two miles and seven furlongs.—A steep rocky hill on left, road pretty good, but stony.

Three miles and three furlongs.—Some deep heavy sand, road then becomes pretty good, country level, scattered with bushes.

Three miles and five furlongs.—Pass what appears to be the bed of a river, banks very low.

Four miles and one furlong.—River about 150 yards wide. Pools of salt water, a foot deep, banks easy and sloping, bed hard, road before laid among low hillocks.

Four miles and three furlongs.—Road still bad, among low hillocks, bed of a river about 150 yards wide.

Four miles and five furlongs.—Bed of a river about 120 yards broad, of deep heavy sand, left bank broken, and precipitous, road still bad.

Five miles and one furlong.—Mulleer river two furlongs broad, bed deep and sandy, banks easy, scattered with jungle.

Six miles and four furlongs.—Pass through some jungle, road heavy and bad, among small hillocks.

Eight miles.—Road becomes good.

Nine miles and four furlongs.—Ghor-ka-Landhee, country during this march a plain, after leaving the ridge of elevated ground quite barren, and scattered with a little jungle. There is a small well of very indifferent water near the Landhee. The country here is covered with low bushes, and a little coarse grass is seen, but no appearance of cultivation.

Ghor-ka-Landhee to the Peepree River.

Two miles and six furlongs.—Open plain on both sides, of considerable extent.

Five miles, and four furlongs.—Hadjee Oomur-ka-Landhee. A well about sixty feet deep, cut through sandstone, with a sloping descent, and steps into it, eight feet in diameter, and one foot and a half of green looking water.

Seven miles.—Enter the other road. The road is in general good, but in some few places, sandy and heavy. The country is level, scattered with milk bush, quite desert, and no appearance of cultivation.

Thirteen miles and five furlongs.—Peepree river, and ruins of Landhee.

General Report.

The general direction of Kurrachee from Tatta, is about W. $\frac{1}{2}$ N., and the distance fifty-eight and half miles, nearly, by the perambulator, from the top of the hill above camp to the Fuqueer's tank, at the former place. The road itself presents no obstructions which could not be easily removed, except being in several places deep and heavy from sand.

The country, with the exception of that about Googah, and in the vicinity of the Mulleer river, is at present little better than a perfect desert; at these places there is the appearance of a little cultivation.

The scarcity of water is so great at present, that this route is impassable for troops, except in small detachments of from 100 to 200 men. There is a good supply at the Mulleer river, and at Googah, $35\frac{1}{2}$ miles distant from each other; but at the Peepree river and Garah, it is both very scarce and bad. Kurrachee itself is by no means particularly well supplied, and additional wells would be required, were any force to be stationed there.

Grain is procurable, but in no great quantity, at Garah, and of course at Kurrachee; but it would be unsafe to depend upon that place, even for any in considerable supply.

Dry forage is procurable in small quantity at Garah and Kurrachee; but not equal to the consumption of even a small body of cavalry; what may be procured from villages near the road is alto-

ther insignificant. About the Mulleer river and at Googah, a considerable quantity of coarse grass might be procured by grass-cutters.

Fuel appears to be abundant.

Several flocks of sheep and goats were seen near the road ; camels are abundant.

To render the route practicable at present, it would be necessary to dig wells at the Peeprée river and Garah, and even then it is impossible to say what supply can be procured till the experiment is tried on a pretty extensive scale ; water is certainly procurable by digging in the beds of the rivers, but it is necessary to go to the depth of from five to ten feet. The Mulleer river near Kurrachee is the only point where water was seen within two feet of the surface.

Landhee also appears a favourable place for wells, but does not give marches of such convenient length, as the Peeprée River and Garah. Should a supply be abundant at these places, the marches would be

	<i>Miles. Furlongs.</i>	
Kurrachee to Mulleer River,	14	1
„ Peeprée ditto,	8	7
„ Garah ditto,	14	5
„ Googah ditto,	12	0
„ Camp ditto,	8	7
Total,	58	4

In considering the communication between Tatta and Kurrachee, the Garah creek should certainly not be overlooked, as although very winding, it affords carriage by water to within twenty miles of camp. Boats of from twenty to thirty candies are said to be able to go as far as Garah, and the water at Bumbhora to be sufficiently deep for vessels of much greater burden. At this last place, are the remains of wells filled up, and it is not impossible that it might be found to be an eligible situation for depôts of provisions, &c. should this route become of importance. The investigation of this point, however, can be satisfactorily carried on by means of boats only.

The whole of this part of the country is said to be at present suffering from a want of rain for two years. Without being acquainted with the actual change produced by a favourable season, it is impossible to say exactly, in what degree the communication would be facili-

tated with regard to supplies, or impeded by the rivers, canals, or standing pools; many of the former, from the state of their banks, appear to be, for a longer or shorter period, the channels of rapid torrents; and the country in several places has the appearance of being under water, or very swampy, during some time of the year.

In addition to the unfavourable circumstances with regard to the want of rain under which this route is at present seen, may be added the evident want of exertion on the part of the inhabitants to put the supplies which the country does afford, at the disposal of any part of the British Army.

(Signed) A. C. PEAT, Captain,
Bombay Engineers.

Report on the Road from Sinde, from Subzul to Shikarpoor. By
Mr. Nock.

1. Surwase, the last stage in Bhawal Khan's country, is a small village, in which is the tomb of Nawab Moosa Khan, direction N. E. 80°, distance eight miles from Subzul-kote, and the road leads through slight jungle, a nulla about half way with a wooden bridge, and a village, the frontier of Sinde.

2. Subzul-kote is a pretty large place, having a good bazar, and many wells, out of the town, of good water; to the North, is the dund or lake, which is fast drying up; the spot chosen for the encamping place, is among some ground broken by the plough, S. E. of the town, in the neighbourhood of wells, and a small jungle, which can soon be cleared.

3. Oobowrah is about thirteen miles distant from Subzul, due W.; the encamping ground lies N. E. and S. E., the same spot where the Shah encamped on his way to Shikarpoor. There are three good wells about the vicinity, known by a date tree near the lake, and one of them undergoing repairs; on the other side, in a grove of large tamarisk trees, another well, and in a plantation, marked by a few plum trees, (Ber,) one well independent of the wells in the village, and the nulla

over which the pukka bridge is built, which is going to decay, contains water all the year round, and teems with fish. The road to be traversed is inundated ground when the overflow of the river Indus takes place; at present dry, and considered a good road, with the exception of a slight jungle. Oobowrah, distance from Subzul, is about thirteen miles.

4. From Oobowrah, next stage is Bagoodra. The road on the first onset, is over bogs of mud and water, and over a nulla with a wooden bridge; the jungle runs from here about a mile distant, after which a good road until about half mile near the village of Mammadpoor; before reaching this, you pass a lake and the villages of Rajunpoor and Sooe to the left, distance about three-quarters of a mile from the road, and Tig one mile, also a garden and well. Leaving Mammadpoor you meet the small village of Koraeen and the Muswae drain running on to Meerpoor, and on reaching Bagoodra a nulla is crossed; distance from Oobowrah thirteen miles. The encamping ground is on the South of the village, having the command of five good wells of water: here the Shah once encamped.

5. Surhad is about nine miles distance from Bagoodra, and after leaving a jungle runs for about, then a good space for about one mile until Tutta Malna, after which a slight jungle until reaching the drain, when a pretty thick one commences to near the village. A well and a few habitations of shepherds, with the village of Janpoor, is seen to the right. A good encamping ground, with more than nine wells in the neighbourhood. Shah Shooja encamped here.

6. Gotkee from Surhad is about nine miles, a pretty good road almost all the way; about the midway, is a canal thirty feet broad, but no great obstacle, and perfectly dry; there are also two small drains to be passed before reaching Gotkee.

7. From Gotkee to the next stage is Dadoola, distance about thirteen miles, direction S. W. 70°, passing three villages, Bammbowala, Bhisttee and Malloodee; all the way a slight jungle, which can soon be cleared with a little trouble. The encamping ground is on the North side of the village, having the use of three wells on the lands. This part of the country is well peopled, and cultivation is getting on prosperously; passing Bhelar is a drain, which should be avoided. By trending on the East side, the road is much freer from jungle, direction

S. W. 64°; this village is situated on the dund, and deep water, which runs on to Azeezpoor and Hoosein Belee. The encamping ground had better be on the bank of the dund, which is about ten, twelve, and fourteen feet high; the road leads on the bank, and over jungle, and in one place over a cotton field on to Azeezpoor, which is also near the river, but the ferry commonly known by the name of Azeezpoor-ka-Pattan, is at the village of Hoosein Belee. Azeezpoor from Chooga is about four miles distant.

9. The next halting place is Hoosein Belee, at the ferry. After crossing a deserted dund, completely dry at the road, and some small jungle, there are two streams at the present ferry; one, the dund, about 150 feet broad, with two, three and four feet water, the last is an extensive one; two boats ply here, one on each stream, and people land on the Bet, or island, having to go about one and a half mile, when they again embark and land on the other side. The two ferries made here are a matter of choice of the boatmen to save themselves the trouble of plying to a long distance; for there is a good ferry higher up where the army should cross.

10. The Indus on the western bank contains water twelve, sixteen, and eighteen feet, and at the centre stream more than thirty and forty feet deep, with a strong running current. Near the Bet (an island,) ten, twelve and eight feet water, and on the East bank four, six and eight feet water. There are two villages situated on the northern bank of the river, named Syud Amee Mohamed and Phoolooda Ghat, crossing the ferry. The place of encampment pitched on is at the village of Ghat Awril, about a mile from the river, and in a fine plain; the river water is used here, and there is but one small temporary well.

11. From Ghat Awril, taking a direction N. W. 80°, about a mile on the road, is the small village of Mota Mar, and then about half a mile further is a good drain, over which is a temporary bridge, all sheltered; horsemen are obliged to keep to the left, and pass the drain, taking the same direction; and leaving Rubban and Eajmut to the left, the latter a comfortable village, you pass a small jungle on to Koriee, where is the encamping ground of the army on the south of the village; the difficulty here to be experienced is from the well water, which is not good.

12. Leaving Kaeé, the direction varies to N. W. 60°, distance from Ghat Awril to this place is little more than twelve miles. Shikarpoor is the next stage, before coming to which you pass through a good path, road on both sides free from jungle, and after reaching Lubauna, you pass the Sindé canal. Lubauna is a village under Meer Aly Moorad, and to appearance the inhabitants are in a comfortable way ; patches of cultivation mark the road on to Shikarpoor. Distance from Kaeé nearly twelve miles.

(Signed) J. Nock.

(True Copy,)

(Signed) ALEX. BURNS,
Envoy to Kelat.

Proceedings of the Asiatic Society.

(Friday Evening, 13th January, 1843.)

The Annual Meeting of the Society was held on Friday evening the 13th January, the Hon'ble the President in the Chair.

*The following Gentlemen were proposed as Members of the Society :—

The Rev. CHARLES IRVINE, St. Xavier's College. Proposed by the Hon'ble Sir H. SETON, seconded^d by H. TORRENS, Esq.

Lieut. BAIRD SMITH, Bengal Engineers. Proposed by H. TORRENS, Esq, seconded by Lieut. A. BROOME, B. A.

Baboo COSSINATH BHOSE. Proposed by Dewan RAM COMUL SEN, seconded by Baboo PROSSONO COMAR TAGORE.

JOSEPH ST. POURCAIN, Esq. Chandernagore. Proposed by Dr. WISE, seconded by the Acting Secretary.

Library.

The following list of Books, presented and purchased, was read :—

Books received for the Library of the Asiatic Society, for the Meeting of the 13th January, 1843.

The Calcutta Literary Gleaner, for January 1843. Vol. I, Nos. 9 and 11, from the Editor.

The Calcutta Christian Observer, for January 1843. New Series, Vol. IV, No. 37, from the Editor.

Oriental Christian Spectator, 2d Series. Bombay, November 1842. Vol. III, No. 11, from the Editor.

Journal des Savants, Juillet 1842. Paris.

Annals and Magazine of Natural History. London, September 1842. No. 62. Purchased.

London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science, 3d Series. Vol. 21, No. 136, August, 1842.

Transactions of the Society of Arts, &c. London, 1841. Vol. LIII, Part 2d.

Proceedings of the Geological Society of London, 1840-41. Vol. III, Part II, Nos. 72 to 76.

Yarrell's History of British Birds. London, 1842, Part 31. Purchased.

Chinese secret Tried Society of the Tien-ti-Hi-uh, by Lieut. Newbold and Major General Wilson. Presented.

Stevenson's Translation of the Sanhita of the Samadeva. London, 1842.

Iben Khallikan's Biographical Dictionary, translated from the Arabic, by Bn. MacGluckin de Slane. Paris, 1842. Vol. I. from the Author.

Archæologia, or Miscellaneous Tracts relating to Antiquities. London, 1842. Vol. XXIX, from the Archæological Society.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the month of November 1842, from Government.

Read the following letters from Government.

No. 1184.

TO H. TORRENS, Esq.

Secretary to the Asiatic Society.

General Department

SIR,—In continuation of the previous correspondence respecting the proposed publication of Dr. Cantor's Chusan Report in the Researches of the Asiatic Society, I am directed by the Hon'ble the Deputy Governor of Bengal, to transmit to you for the purpose therein mentioned, copy of a further letter from Dr. Cantor, dated the 10th of October last, together with the Manuscript which accompanied it, entitled, "Some account of the Botanical Collections made by Dr. Cantor during his service in China," drawn up by Assistant Surgeon W. Griffith.

I have the honor to be, Sir,

Your most obedient Servant.

H. V. BAYLEY,

Deputy Secretary to the Government of Bengal.

Fort William, the 14th December, 1842.

TO G. A. BUSHBY, Esq.

Secretary to the Government of Bengal.

SIR,—I have the honor to submit the accompanying Manuscript, entitled, "Some account of the Botanical Collection made by Dr. Cantor, during his service in China," drawn up by Mr. W. Griffith, who on receiving a series of duplicates of the botanical collections formed for Government during my service in China, promised to undertake the task now performed.

2. As the contents of Mr. Griffith's Manuscript are illustrative of the Descriptive Catalogue of Animals, collected at Chusan, which I had the honor to draw up by order of the Right Hon'ble the late Governor General, it would be desirable that both should be published in conjunction.

3. As you have been pleased to present my Manuscript to the Asiatic Society, I have the honor to solicit that you will favor me by presenting Mr. Griffith's Manuscript to the Asiatic Society, with a view, that it may appear in the same volume of the Society's Researches, in which my Manuscript is to be printed.

4. Mr. Griffith has offered to correct the press when he shall have arrived in Calcutta.

5. Finally, I beg to apologize for the unavoidable delay which has taken place in the transmission of the accompanying Manuscript.

I have the honor to be, &c.

(Signed) T. CANTOR,

P. W. Island, the 10th October, 1842. Assistant Presy. Surgeon.

(True Copy.) H. V. BAYLEY,

Deputy Secretary to the Government of Bengal.

Ordered—That the thanks of the Society be returned to Government, and that the MSS. be published in the Transactions.

No. 317 of 1842.

From G. A. BUSHBY, Esq. *Officiating Secretary to the Government of India*, to H. TORRENS, Esq. *Secretary to the Asiatic Society Fort William*, the 7th December, 1842.

Political Department.

SIR,—I am directed by His Honor the President in Council to forward to you for submission to the Asiatic Society, the accompanying Fac Simile of an Ancient Inscription recently discovered in Aden, by work people employed in excavating a new road, together with transcript of a letter from the Political Agent at Aden to the Secretary to the Bombay Government, forwarding the same, with his observations.

I have the honor to be, Sir,

Your most obedient Servant,

Fort William, the 7th December, 1842.

G. A. BUSHBY,

Officiating Secretary to the Government of India.

Ordered—That the letters be duly acknowledged, and that Captain HAYNES' letter with a lithograph of the Inscription be referred to the Secretary for early publication in the Journal.

Read extracts from private letters of Major TROYER to Mr. TORRENS and to Baboo RAM COMUL SEN, enquiring as to the transcription of the Vedas for the French Government. The Hon'ble the President stated that this had been a private account between the late Mr. JAS. PRINSEP and the French Government, and that on the retirement of M. GUIZOT from office, the allowance of 1500 francs annually had been stopped; that the accounts had been duly rendered; and that there was even a small balance due. Upon enquiry of KAMALAKANTA PUNDIT, who had conducted the Benares correspondence, he stated, that about "seven anas" 7-16ths were copied and sent, and that the remainder 9-16ths could be obtained whenever cash

arrangements were duly made.* The Acting Secretary was requested to communicate officially with Major TROYER, on the subject of his letter, after making due enquiries.

Read the following letter from T. S. STOPFORD, Esq. accompanying the handsome Donation to which it refers, and for which the best thanks of the Society were voted, for his polite attention in supplying this blank in the Museum.

Chandpore, Diamond Harbour Road, 2nd January, 1843.

MY DEAR SIR,—Mr. Higginson tells me, that the Asiatic Society is in want of a good specimen of a *Wild Boar*.

By the bearers I send one I killed yesterday, than which I have seldom seen a finer. He was a famous one too, having been hunted last year several times by the "Tent Club," without success, and became the terror of the villages about this place.

If it could be stuffed, it would be better than a *skeleton*, and ticket it, "Presented to the Asiatic Society's Museum in behalf of the "Tent Club," and killed by J. S. Stopford, 2nd January, 1843."

I remain, Dear Sir,

Yours truly,

J. S. STOPFORD.

The following list of articles presented to the Society by Lieut. W. S. SHERWILL, 66th Regt. N. I. Revenue Survey, Gya, was read. They will be found referred to more particularly in the Zoological Curator's report.

List of Specimens presented to the Asiatic Society's Museum. By LIEUTENANT
WALTER S. SHERWILL.

One Horn of South African black Rhinoceros. *R. Africanus*.

One ditto, polished.

One pair of Horns of Male Hartebeest. *Damalis Canina*

One pair of Horns of Male Bontibok. *Gazella Pygarga*.

One Skull of Ethiopian Hog, *Sus Larvatus*, from Port Natal, South Africa.

One lower Jaw of Hippopotamus.

One pair of Horns of Roee Rhiebok, *Redunca Villosa*.

Two Tusks from lower Jaw of Hippopotamus, (*S. Africanus*.)

One strip of Hide from Hippopotamus, of which are manufactured the Cape "Sam-boks," or Whips.

Two Tusks of Hippopotamus, (lower jaw.)

Two lower projecting circular Tusks or Rooters of the same animal and individual; killed at Port Natal.

One Skull of Hytax, or Rock Rabbit, from the summit of the Spitzkopf Mountain, the highest peak in S. Africa, height 10,250 feet above the sea, which is seen to the south at the distance of 126 miles.

Two Wooden Spoons of Hoolu manufactory. Tribe of King Moselekatse.

One Horn of Springbok, *Gazella Euchore*.

* Major Troyer's letters also stated, that the Societe Asiatique had not yet received the 4th Vol of the Mahabarata though dispatched long ago

Two odd Horns of Blesbok, *Damalis Canna*.

One single Horn of a Cow Eland or Impoofoo, *Damalis Oreas*. Bull stands six feet six inches high at the shoulder.

Six Poisoned Arrows of Bushman manufacture, made of reeds, tipped with bone from the Ostrich thigh bone, inserted in a piece of strong wood, and bound with the dorsal sinew of the Springbok Antelope. The poison is composed of a species of red slime or moss, called by the Dutch "klip gift," or "rock poison." It is common to all waterfalls and damp spots in the snowy mountains in South Africa; this ingredient mixed with the poison from the poison-fangs of the Cobra-de-Capello and the inspissated juice of a bulb named by the Dutch "telp," resembling a crocus with a blue flower, forms a mass which is smeared on the shaft and bound with sinew. The effects of this poison are sudden, and very fatal.

Three Tails of Cameleopards, *C. Australis*.

6th November, 1842.

The grateful thanks of the Society were ordered for this handsome Donation, of which many of the objects excited great admiration, and are most valuable additions to the Museum.

Read the following extract of a letter from Lient. BAIRD SMITH, referring to his former enquiry as noticed in the Proceedings of (See November or December Proceedings.)

Camp Delhi, 11th December, 1842.

MY DEAR SIR,—Accept my best thanks for the trouble you have taken in forwarding to me the extract from the Papers, relative to the Earthquake of the 11th ultimo, and those in Persian &c. relative to Earthquakes in general. Both are most acceptable, and you will oblige me by thanking Mr. Torrens in my name for the latter.

There is no doubt whatever as to the existence of the Zill Zillee Namah, and that portion of the Calcutta native *savans* who doubt of this, because not themselves aware of it, have fallen into the not unusual error of reducing the information of others to the standard of their own ignorance. Dr. Falconer has repeatedly seen and examined it during his travels in Cashmeer, and by a note just received I learn, that although a copy of it cannot be procured in Delhi, many of the learned natives there are acquainted with the work. I fear, however, that it is from Cashmeer only that it is to be procured, and I have sought the aid of Mr. George Clerk in procuring it thence.

Very sincerely yours,

R. BAIRD SMITH.

Read the following letter from the Curator in the Zoological Department:—

Asiatic Society's Museum, 13th December, 1842.

SIR,—I beg to represent to you the urgent necessity that exists for not longer delaying to supply cases for our rapidly increasing collection of stuffed Mammalia.

- Of the many specimens that are now risking the consequences of exposure, I find that two have already suffered from insect ravages. Fortunately, these chance not to be of value (further than as regards the time expended on the preparation of them), being merely a Jackal and a common Fox, but the same injury might have happened to species which are not so easily replaced, and which are still liable to be thus attacked and ruined.

It is moreover injurious to such of our specimens as are under cover, to crowd them one upon another, as I have hitherto been obliged to do, to bring as many of them as possible within the protection of the two small glazed cases which alone can now be allotted to them; and the proper display of our collection of Mammalia to visitors is altogether impracticable under existing circumstances.

I may also be permitted to add, that it is evidently felt as discouraging by our taxidermists, that the specimens upon which they have bestowed so much pains in getting up, should be suffered to receive injury for want of the needful protection of glazed cases.

It is now some months since the admeasurements were taken for two large cases, such as would amply supply our present wants, to be placed outside the Society's meeting-room, and opposite each branch of the staircase; but I have understood that the order for these has been, for the present, countermanded; and in the mean while it devolves on me to remind you that the perishable specimens intended to fill them are in constant jeopardy, certain of them having already suffered injury as hereinbefore mentioned.

Yours obediently,

ED. BLYTH.

Ordered—That the estimate be prepared, and referred to the Committee of Papers for approval.

Read note from R. C. GATFIELD, Esq. presenting Bows and Arrows used by the Hill people about Rajmahl, for which the thanks of the Society were ordered.

Read letter from Mr. JAS. DEARDEN, Serampore, for whose curious Donation the thanks of the Society were voted.

To the Secretary of the Asiatic Society.

SIR,—If the enclosed Nest or Bag,* which I found on a tree in the Garden of the late Dr. Carey, at Serampore, be deemed by you worthy of preservation, I beg your acceptance of it for deposition among the Society's collection of curiosities. It contained at the time of finding, two or three solitary, common red Ants, (these I imagine, were not the framers) and was disposed between two unfaded leaves which were firmly united round the edges by some adhesive matter, and so compressed, that they expanded at the centre, taking the form of a mango fruit stone. The opening was at the tips of the leaves. During the last six years, I have never observed any change in it.

I remain, Sir,

Serampore, 28th December, 1842.

Yours obediently,

JAS. DEARDEN.

Read the following letter from Major BOILEAU, of the Magnetic Observatory, Simla:—

Simla, 8th December, 1842.

MY DEAR SIR,—I have the pleasure of sending, through my brother, two more Sets of Tables, one a transformation of Mr. Oltmann's Barometrical Tables, which will be very useful, in enabling the labourers in this department of Physics to reduce all these

NOTE.—This Nest was probably the production of a silk weaving spider, but nothing farther could be ascertained.—ED

observations by one common method; and, secondly, a very convenient and portable set of Refraction Tables, which I have extended and enlarged from those printed in the Philosophical Transactions, for 1838. Portable Tables of this kind are still much wanted, and as Mr. Baily has given these (on a small scale and before the publication of Mr. Ivory's second paper, which introduces certain corrections in the former numbers,) they may be looked upon as filling up another desideratum for the Travelling Observer's library.

I remain,

My Dear Sir,

Yours very truly,

J. H. BOILEAU.

The best thanks of the Society were voted for these valuable fruits of Major BOILEAU's labours, and the papers were referred to the Editor of the Journal for publication.

Read a translation of ten Sanscrit Slokas, composed by KAMALAKANTA PUNDIT, on the restoration of the Gates of Somnath.

Read the Report of the Curator of the Museum of Economic Geology for the month of December.

Report of the Curator Museum of Economic Geology for the month of December.

Museum of Economic Geology.—The following letter from the Right Honourable the Board of Control has been transmitted to us by the Private Secretary, from the Right Honourable the Governor General. It is in reply to the circulars of this department addressed to the Board by our Secretary.

Camp Korna, November 30th, 1842.

SIR,—I am directed by the Governor General to transmit the accompanying letter.

I have the honor to be, Sir,

Your most faithfully,

H. M. DURAND, *Lieut. Private Secretary*

The Secretary of the Bengal Asiatic Society.

India Board, 16th September, 1842.

SIR,—I am directed by the Commissioners for the Affairs of India to acknowledge the receipt of your letter of the 4th July last, forwarding a Prospectus of a Museum of Economic Geology, which has been established at Calcutta, in connection with the Bengal Asiatic Society. The Board are fully sensible of the advantages that may result from the researches of this Society, not only to the Scientific, but also to the Agricultural and Commercial portions of the community, and I am desirous to assure you, that it will give them much pleasure to favor the attainment of the objects which it has in view.

I am, Sir,

Your most obedient humble servant,

W. B. BARING.

The Secretary of the Bengal Asiatic Society.

I have the pleasure to state, that we have recovered, through the agency of Major Manson, Political Agent with Bajee Rao at Bithour, four cases of Minerals and Geological specimens, shells, models of crystals, &c. and one Chemical Balance with a Nicolson's Gravimeter, and a small box of blowpipe tests, &c. These, as I learned from

Captain Herbert's Journal, had been made over to his survey from Captain Dangerfield's, and it at last occurred to me to address Major Manson in my search after them. A part, it appears, were sent down to the late Mr. J. Prinsep, but the remainder have now reached us. The specimens are in a sad state of confusion, but I recognise several referred to in Captain Herbert's Journals, and there are many which will either fill up blanks, or be very illustrative and useful in our collections. The apparatus also is in a dilapidated state, but can be repaired, and will all be of service in the laboratory.

Lieut. Yule, of the Engineers, Executive Officer at Chirra Punjee, has at my request obliged us with four bags of the Fire Clay of that locality, to which I propose giving a trial in the construction of the furnaces of the laboratory; a specimen is upon the table. Mr. Mornay, Civil Engineer, from whom we purchased the Minerals noted below, has presented us with a small, but highly interesting and instructive set of fifteen specimens from the Coal field of Burdwan, consisting of the coal, porphyry, dykes in contact with the coal, and petrifications.—I may notice amongst these last, a splendid specimen of the top of a tree Fern, No. 15, which is now on the table, and No. 4, an instance of coal altered to mineral charcoal, by the agency of a dyke of trachyte. This is not uncommon, but we had no Indian specimens of it hitherto.

I have also to report from this department a first dispatch of specimens to the Honourable the Court of Directors through the Government of India, consisting of a part of Captain Tremenheere's Tin Ores and Matrix from Kahun, Porcelain and Fire Clays, Ores of Manganese and Antimony and Iron, in all 21 specimens.*

Mineralogical and Geological.—Mr J. Pontet, Deputy Collector of Bhaugulpore, has sent us a box of various specimens, principally geological, but his list of localities has not yet been received. He has been good enough to promise us further supplies, and as he is known to be a most active searcher amongst the Coal fields of that district, we shall doubtless profit greatly by his kind assistance.

From the Rajmahl District.—From C. P. Gatefield, Esq. we have also a small collection of Geological specimens, carving from Peer Pointee, and some stone Cannon Balls from near the Telleaghurly Pass, which he describes as follows: "These Cannon Balls were dug up about a mile from the Telliaghurly Pass, there are 5 or 6 Cannons at this Pass still, and the balls fit these guns; they must have been in use during the Mogul Government. Telliaghurly is situated between Calgong and Sicery."

Having been authorized by the Committee of Papers to endeavour to purchase from Mr. Mornay's Collection such part as would be useful to us, I have done so to the extent allowed, and the Minerals are now upon the table, to the number of 90 Specimens for 120 Rs. Amongst these, I may notice the specimens of Gold Ores from Brazil, as they occur in the various rocks, or with minerals, which are especially instructive for the Museum of Economic Geology. The seven specimens of Diamonds of various Crystallisations, Octohedrite from the Gold Clay, and from Mexico, are remarkable; as are also the specimens of Russian Platina and Platina Sand, and many of the minerals, which are rare, or valuable, on account of their crystallisations.

* The suggestion of Captain Tremenheere, that the Museum should acknowledge its contributions by an engraved letter, in the style of those of the Royal Museum of Economic Geology, having been approved of by the Society, I have now the pleasure to submit, for inspection, some letters prepared from our own steel plate, with a lithographed form added below it

As the hour was late, and much business yet before the Society, the reading of the report of Dr. ROER, the Librarian, was postponed to the next Meeting.

A note from Dr. T. A. Wise, B. M. S. was read, stating, that as he intended to proceed to Europe viâ Egypt, he should be happy to be the bearer of any books or other articles which the Society might desire to present to Mahommed Ali Pasha. It was ordered that a list of the Arabic works printed by the Society should be sent to the Hon'ble the President for him to direct what might be most acceptable.

The Hon'ble the President referring to the great loss the Society would sustain by the loss of the services of their talented Secretary, Mr. H. TORRENS, in that office, desired the following letter to be read:—

H. PIDDINGTON, ESQ.

Joint Curator Asiatic Society of Bengal.

SIR,—I beg urgently to request that you will have the kindness to relieve me, pending the ulterior arrangements to be determined by the Asiatic Society, of the current duties of the Secretariat Office.

There is I beg to state no duty among them, with the exception of the collation of certain MSS. of the "Tareekh-i-Nadiree," (now under preparation for the Press,) which requires a degree of attention, which you might find it inconvenient to give.

I beg that you will state to the Hon'ble the President, that this work is nearly completed, and that I will carefully go through the MSS. before laying it before him.

The financial responsibilities of the Secretary will of course rest with me, until I am formally relieved from them.

Under these circumstances, I trust that you may not find it impossible to accede to my request, in which case I shall beg you to lay before the Hon'ble the President the accompanying letter of resignation

I have the honor to be, Sir,

Your very faithful servant,

H. TORRENS.

TO THE HON'BLE H. T. PRINSEP, ESQ.

President Asiatic Society of Bengal.

HON'BLE SIR,

Having performed to the best of my ability the duties of the Secretariat Office of our Society for about three years, I now feel myself under the necessity of resigning them, principally by reason of their being now too heavy to enable me to perform them with benefit to the Society.

You are aware that other causes of a public nature operate to confirm me in this step.

During the period of my holding office, I have addressed no Annual Report to the Society of what has been done in the several branches of science in which its Members, and the scientific public of India, are interested. I was diffident upon the point of ranking myself, in a published report, among those whose real attainments give them a personal right to review and discuss the proceedings of the philosopher, the antiquary, and the naturalist.

I need not revert to the period when sudden illness deprived the Society of the invaluable services of your esteemed and lamented brother, James Prinsep, as that in which the interests of the Society were more deeply affected to their detriment, than had perhaps ever before been the case.

He was taken from the active pursuit of his literary and scientific researches, without the opportunity of giving to his successor the means of arranging what was left necessarily in confusion by his sudden prostration, throughout all the departments of science and details.

Professor O'Shaughnessy, who undertook the duties of Secretary, though harassed by unceasing labour, both in the laboratory and the lecture room, was aided in the Oriental Department by Mr. Sutherland, than whom none could be more capable for such duty. He too was, however, as heavily charged with public work, as was the Professor.

It was at the instance of these gentlemen, and more specially of our late President, Sir Edward Ryan, that I consented to undertake the duties of Secretary.

Since that time, the Society has been able to avail itself of the services of two gentlemen as Curators of the Museum, Mr. H. Piddington and Mr. Blyth, and of those of Dr. Roer, as Librarian.

Whatever has been done, has been effected through their agency. I refer you, Sir, to their reports, to the present state of our Museum and our Library, in proof of the good fortune upon which the Society may congratulate itself, in that their effectual services were able to supply deficiencies in another quarter.

To Mr. Piddington, I owe a personal debt of gratitude for much gratuitous labour, by which he has either relieved or assisted me, when public duty or personal incompetency rendered me unequal to the calls which were made on my time, or my qualifications for the post I held.

You are aware, Sir, that I have conducted the publication, called the "*Journal of the Asiatic Society*" on the same understanding, as did James Prinsep; viz. at my personal risk, though supported by the Society in the matter of subscription at a certain rate for each copy furnished to a Member. I propose to complete the twelve numbers due for the current year, and then to give up the Editorship. Whether it may be expedient that the Society should make the *Journal* its own, will be a question, Sir, for your future consideration.

In the important matter of our finances, the Society have I trust been fully satisfied, that in spite of a most liberal expenditure, our assets have accumulated.

I must, however, request that you will name a Committee to audit my accounts, and give me a final acquittal of responsibility.

I now, Sir, resign to you my appointment as Honorary Secretary, the duties whereof have been temporarily assumed by my friend, Mr. Piddington, at my urgent request, pending ulterior arrangements; and in so doing, I have to thank you, Sir, and the Members of the Society for the support I have received, while I at the same time apologise for no few errors, and many omissions, which the nature of my public onerous and responsible duties, as well as the pressure of other circumstances rendered it most difficult for me to avoid making. I have the honour to be,

Sir,

Your very faithful servant,

H. TORRENS.

P. S.—In emendation of my proposal to have the accounts audited by a special Committee, I beg to submit them herewith for general inspection.

The following resolutions were then unanimously passed on the motion of the Honourable the President, seconded by Sir John Peter Grant.

It is proposed that in acknowledgment of Mr. Torrens' services to the Society, a subscription be entered into for the purpose of presenting him with an appropriate Testimonial.

That an Inkstand appears the fittest Testimonial to select.

Resolved—That the accounts received from the Secretary be approved and passed.

Resolved—That the Society accept the resignation of Mr. Torrens with extreme regret, and offer him their grateful thanks for the services he has rendered to the Society, during his conduct of the important and various duties of the Secretary's office.

Resolved—That in the opinion of this Meeting the Society would not be warranted in recommending to the office of Secretary any person, howsoever qualified by scientific attainments and business habits, who could not also superintend the Oriental Department, and the publications for which funds are furnished to the Society by Government.

That as no person has offered himself competent to superintend both the Sanscrit and Arabic and Persian works now in the press, and proposed for publication, that a temporary arrangement be made until such a competent person can be found.

Resolved—That Mr. Piddington be requested to continue to conduct the duties pending the vacancy of the office.

Resolved—That the Society conduct on its own part the Journal, from the date when it may be given up by Mr. Torrens.

Mr. Piddington signified his sense of the honor conferred upon him, and his readiness to give every assistance to the Society in the conduct of the Secretariat duties.

ADVERTISEMENT.

The "Palæologica" I published in the year 1832, as well as my work on fossil bones of the country of Georgensmünd, (1834) and my palæontological treatises contained in the Transactions of Academies and various Natural Societies, were so favourably received, that since some years I have been honoured with specimens of similar fossil organic remains of a former world, which on examination, offered important matter for results about fossil bones of the Mammalia, Reptiles, and Birds. Whilst these rare treasures were imparted to me by public and private collections of Germany, Switzerland, and the adjacent countries, with a readiness deserving every encomium, I am requested from different parts, not to publish my inquiries separately, but in a particular work. In order to satisfy such unbounded confidence and kind desire, I am willing to advance a work under the above title referring to the Fauna of a primitive world, which will contain my inquiries about fossil bones. As it is impossible to give a complete insight with this advertisement, it will suffice, to form a judgment of its worth, by citing, that this work, among the rest, will treat—of fossil bones of Pachydermata (Mastodon, Rhinoceros, Palæotherium, Dinotherium, Tapir, Microtherium, &c.), Ruminantia (Meryx, Orygotherium, &c.), Rodentia (Lagomys Oeningensis), Carnivora (Harpagodon, Pachyodon, &c.), Tortoises, Sauriens, Frogs, and Birds, which have been found in beds of Lignite or Brown-coal in Switzerland and in other deposits of Molasse in this country, as well as in the pits of pisiforme Iron ore or Möskirch, in the calcareous marl near Oeningen, the gypsum near Hohenhoven, in the strata near Weisenau, and in other tertiary strata; of the skeleton parts of the marine Mammalia, called by me *Halianassa*, which very well designates the upper tertiary formations of our part of the world; of remains of Sauriens, Tortoises, and Birds from the cretaceous group (in the canton of Glaris, &c.); of the Plateosaurus from the Keuper; of the teeth of the

Ischyrodon; of Sauriens and Tortoises from the famous formation of the lithographic limestone of Solenhofen; by the co-operation of the President Baron Andrian and the Count Münster, of the remains of the Sauriens of Muschelkalk (Nothosaurus, Pistosaurus, Charitosaurus, &c.); and of the other fossil vertebrated animals.

As to the present eager pursuit of historical investigations about the constitution of the earth and the development of its organic types of animal life, there can be no better evidence than the remains of animals in the crust of the earth, amongst which the vertebrated animals are no doubt of the greatest importance. Thus if we add the creatures produced by the earth in a primitive age to number at present only, we are able to estimate the riches of the whole creation, and to explain the alterations resulting from the sublime laws of nature. I am confident, therefore, that the publication of a work like this, containing anatomical and geological discoveries of a former world, will be readily promoted.

The work will appear in several numbers, the price of which shall be calculated, as is customary with such works, after, the number of sheets in German, printed in Latin letters in gr. 4°, and according to the number of tables in fol°, with plates after my own drawings, or executed after my immediate direction. As gain is not the object of this publication, the lowest price cannot be determined before I know the number of subscribers; the number of copies will not exceed much the number required, and the price in every case, will not be higher than that of similar works. The-subscribers will please to send their direction to the author by the post, or by well known libraries, but plainly written. The list of subscribers will be joined to the work.

HERMAN VON MEYER.

JOURNAL



ASIATIC SOCIETY.

*Memoir on Indian Earthquakes. By Lieut. R. BAIRD SMITH,
Bengal Engineers.*

Among the various Committees established by the British Association for the investigation of subjects of general scientific interest, one has been appointed to register Earthquake shocks in Great Britain, and its labours have already been made public in several Reports to the parent body. From the discussions consequent on the presentation of these Reports, it appears, that in the opinion of well qualified judges, results of but little comparative importance can be anticipated from observation made in localities, where the disturbing forces act with such feeble intensity as in those brought under the notice of the Committee, and it is therefore considered desirable, that similar observations should be made abroad, in tracts of country where greater energy characterises the disturbing powers, and where the effects of these are exhibited on a larger and more important scale. Several such tracts are to be found in India, and a few of the most remarkable convulsions experienced throughout them, are already familiar to scientific men. But no systematic effort has yet been made to record and analyse the various phenomena of Indian Earthquakes, and the narratives of these are scattered throughout the pages of various works, without connection and without method. To collect from every available source, all

the information connected with Earthquake shocks in India and its frontier countries, both in regard to those that have already occurred, and those that in future may occur, is the principal object proposed in this investigation. In regard to the historical portion of the subject, I cannot but feel conscious of its imperfections, since accounts of Indian Earthquakes are in general so meagre in important details, and must always be sought for under so many different sources, that to make the enquiry perfect, would require an amount of leisure and literary resources that very few, if indeed any, in this country, can command. In tracing the history of our Earthquakes, I have, however, done all I could with the materials at my disposal, and perhaps I may yet be able to complete what I now feel to be so imperfect.

More sanguine hopes of interesting results may, however, I think, be entertained in regard to Earthquakes that may be experienced after this time, since a general interest has been awakened in the subject, and the attention of many intelligent and well qualified observers attracted to it. Observations will moreover in future be centralised, and the unsatisfactory labour of gleaning information from many detached sources will be saved. Earthquakes are almost invariably observed when the feelings are excited, and emotions adverse to a calm, deliberate judgment on accompanying phenomena have sway. The greater the scale on which the disturbing forces are exhibited, the more intense will such feelings and emotions usually be, and in those very cases where minute and careful observations would be of the greatest value, observers are generally in a state the most unfavourable for making them. The sensible and permanent effects of Earthquake shocks are frequently detailed with painful minuteness, but those more temporary and evanescent, but at the same time, more immediately connected with the causes to which such convulsions are due, are allowed to pass by unobserved. The tendency to exaggerations induced by this state of mind requires constant allowances to be made for the statements of observers, and we shall be able to estimate the amount of this allowance, only after the phenomena of Earthquakes have been brought to the test of actual measurement by the use of appropriate recording instruments. Such instruments have been brought into use by the Committee of the British Association, but they are yet far from being perfect; and before their full utility can be felt, their sensibility must be increas-

ed considerably beyond the point to which it has yet been carried. This will no doubt ere long be accomplished, and the details of the phenomena of Earthquake shocks be removed from the ill-defined province of feeling, and brought under that of measured space and number.

The chief obstacle to the introduction of such recording instruments as are alluded to above, throughout the Earthquake tracts of India, will probably be found in the incessant fluctuations of society, and the consequent impossibility of obtaining consecutive series of observations. In reflecting on this point, it has appeared to me, that the most permanent local establishments in the country are the mission stations, and that if Missionaries residing in favourable localities, could be induced to receive and record observations with our instruments, they would confer a boon upon science at a very trifling sacrifice of time or labour in the cause. Earthquakes usually occur at distant intervals, and the observations required upon them, are neither complicated nor laborious. I would therefore hope to obtain in course of time the co-operation of those members of favourably situated mission establishments, who may not be unwilling to devote a limited portion of their time and talents to the elucidation of what is certainly one of the most interesting chapters of the physical history of India. Meanwhile, however, until arrangements can be matured for supplying instruments to those willing to receive them, I trust I shall continue to receive the interesting communications of those observers who have so zealously assisted me during the past year, and for whose aid I feel most grateful. Their individual labour will come more appropriately under notice in another page; but I am desirous of expressing to one and all, my acknowledgment of their valuable assistance, since to it must be traced all the interest that this investigation may possess.

To the gentlemen connected with the public press of India, especially to Messrs. Stocqueler and Place, Editors respectively of the *Calcutta Englishman* and *Delhi Gazette*, I am indebted for essential aid, and I trust I may continue to receive from them such notices of Earthquake shocks, as from time to time, may be made public in their papers.

My information relative to Earthquakes in the presidencies of Madras and Bombay is, I regret to say, extremely limited. In both there

are tracts occasionally subject to such shocks, and I would solicit the co-operation of observers under whose notice they may come.*

This Memoir will be divided into the four following parts:—

I. Register of Indian Earthquakes for the year 1842.

II. Historical Summary of Indian Earthquakes, with some remarks on the general distribution of subterranean disturbing forces throughout India and its frontier countries.

III. Analysis of the phenomena of Indian Earthquakes, as exhibited in the two preceding parts.

IV. Remarks on the points to be observed during Earthquake shocks, and on the means of making the requisite observations.

Part. I.—Register of Indian Earthquakes, during the year 1842.

I. JELLALABAD EARTHQUAKE OF THE 19TH FEBRUARY, 1842.

My attention was first prominently attracted to the subject of Earthquakes in India, by the occurrence of that of the 19th of February last. A few brief and imperfect notes founded upon the details I was able to collect, were published in the Journal of the Asiatic Society and my object then was, more to direct attention to the subject of Earthquakes in general, than to furnish rigidly accurate conclusions on this case in particular. Such conclusions were indeed incompatible with the nature of the information furnished me, and I have subsequently ascertained, that many corrections of these are requisite. Yet the notes have fully answered their design, and have led to my procuring much information, which, had they not been published even with all their imperfections, would certainly have been lost to science. From the date of the Earthquake my register was commenced, and it is my intention to continue it regularly, publishing it at yearly intervals. I have some recollection of two Earthquakes having been experienced in Delhi during the month of January 1842, but unfortunately I did not record them at the time, my register not being then commenced, and I have been unable since to verify this im-

* All communications on the subject of Earthquakes in India may be addressed to the author at Seharūnpore, North-western Provinces, Bengal, or if preferred, to the Secretary to the Asiatic Society, Calcutta, or to any of the public papers.

pression. The Jellalabad Earthquake therefore comes first in order, in the year 1842.

In tracing the progress of this Earthquake, I purpose commencing at its most westerly limit, and following it to the Eastward. According to this plan, the first place where its effects are to be noticed is *Cabool*, (lat. $34^{\circ} 30' 30''$; long. $69^{\circ} 7' E.$) The intelligence from Cabool is, however, extremely limited, being confined to the following short extract from a narrative of the events of the captivity at that city, by Dr. Berwick and his party of sick and wounded, left behind, when the British force attempted to retreat to Jellalabad.

“On the 19th of February,” it is remarked, “they were visited by a most awful Earthquake. It continued for some minutes, and rocked the fort in a frightful manner. All the men able to move rushed out into the open air, every moment expecting the walls to fall in and bury them; but God was good, and after three minutes’ duration, each shock succeeding the other in rapid succession, it ceased. The walls were dreadfully shaken, especially the side wall of the European ward, which came down a few days afterwards.” From the effect of the shock, as detailed in this extract, it may safely be inferred, that Cabool did not form its extreme westerly limit, but we have no authentic intelligence of its progress beyond that place, and its would therefore be vain to speculate upon the point.

Proceeding Eastward over a tract of country more rugged and inhospitable than can well be conceived, and descending from a height of about 7,000 to a little more than 2,000 above the level of the sea, we enter the valley of Jellalabad, where the devastating effects of the Earthquake were exhibited on a larger scale than at any other place. The whole line of the Cabool river from Cabool to Jellalabad, experienced, however, the effects of the shock, and many of the forts of the chiefs were laid in ruins, or seriously injured. Among others, that of Budiabad, in which the English prisoners were then confined was, I am informed, much shaken, although not destroyed.

The valley of Jellalabad is thus briefly described by Lieut. Wood of the Indian Navy:—“A ridge of hills called Deh Koh, or the black mountain, rises about Jugdulluck and running East by North till it meets the Cabool river, bounds the plain of Jellalabad on the North; to the South it has the high hill of Nungnihar; East it has the hills of Alee

Baghan and desert of Buttee Kote; while its Western limit is marked by ridges, which here project into the valley of the Soorkh Rood. The length of the Jellalabad plain is 25 miles, and its width does not exceed four miles."

The town of Jellalabad (lat. $34^{\circ} 25'$; long. $70^{\circ} 30'$ *) was garrisoned at the period of the Earthquake by General Sir Robert Sale's Brigade, and hence our information as to the effects of the shock is in considerable detail. The following extract from the *Englishman*, gives the most graphic account of the Earthquake I have yet seen.

Extract from a letter published in the Calcutta Englishman of the 16th May 1842, dated Jellalabad, 28th April, 1842.

"On the 19th February, we had one of the most awful Earthquakes I have ever experienced; it occurred at mid-day, being very stormy at the time, with clouds of dust floating through the atmosphere. The shock lasted about a minute and a half, and commenced with a sound like the rolling of a heavy waggon over a wooden bridge—the earth swung to and fro like the rocking of a cradle; not a man could keep his legs; every one fell prostrate, and a sensation of sickness and giddiness affected all. Bastions and houses came tumbling down with a dreadful crash, and we verily believed we were about to be swallowed up in some yawning chasm. The earth did open in several places, and water appeared on the surface of the ground. The river was thrown into the most violent commotion, and the water dashed over its bank with frightful violence. I was standing on a bastion at the time, it split in two places and crumbled down; I was precipitated to some distance, where I lay stunned and stupified with horror. No one could utter a word, and every face was blanched with terror and apprehension; here was death in a new form, for which we were totally unprepared. Providentially for us, not a man of our party was killed; many were injured by the falling of the houses, but none dangerously: a few of the inhabitants of the town were killed, where the fall of the high houses choked up the street, and left no room for escape; but on the whole the accidents were few, compared to the nature and extent of the mischief. From this period until the

* The positions of places in Afghanistan, are taken from Walker's New Map.

middle of March, we had frequent slight shocks, sometimes so many as six or seven during the twenty-four hours. Our fortifications were seriously damaged by this awful visitation, and we fully expected the enemy would have made a rush upon us, for there were gaps enough, but every precaution was taken to repel them. They hovered about us, however, like birds of prey, trying to ascertain the extent of our damage; whether they learnt it or not I cannot say, but seemingly they thought it better to let us alone. We fell to work again with renewed energy, and in a short time repaired much of the injury the works had sustained, labouring night and day without intermission, until we were once more able to set the enemy at defiance."

The appearance of water at the Earth's surface through fissures made by Earthquake shocks having been connected with theoretical considerations on the causes of the events,* I felt desirous of verifying the statement made in the above extract, that this phenomena was observed at Jellalabad, and I therefore wrote to my friend Major Broadfoot, C. B., requesting him to give me any information on the point he might possess. In reply, under date Jellalabad, 13th July 1842, he thus writes: "You ask where the water came from that issued from the cracks in the earth. I saw no water issue from the cracks which opened where I was, nor signs of any in others, and I saw more of the effects and sooner than perhaps any one else; nor do I remember hearing of water issuing from the earth at the time. Still it may have happened." And the nature of Major Broadfoot's duties gave him the best possible opportunities of observation, it is probable that had water actually been ejected from the earth, the circumstance would not have escaped his notice, and the statement that it did do so, must be considered as very doubtful.

A few further particulars of the Earthquake at Jellalabad are given in the following extract from Sir Robert Sale's official dispatch, dated Jellalabad, 16th April 1842: "But it pleased Providence, on the 19th of February, to remove in an instant this ground of confidence (alluding to the defensive works executed by Major Broadfoot for the protection of the city.) A tremendous Earthquake shook down all our parapets built

* On Hydrostatic Pressure as a cause of Earthquakes, by the Rev. John Toplis, B. D. Jameson's Journal, No. 59, p. 84.

up with so much labour, injured several of our bastions, demolished a third of the town, made a considerable breach in the rampart of a curtain in the Peshawur face, and reduced the Cabool gate to a shapeless mass of ruins. It savours of romance, but it is a sober fact, that the city was thrown into alarm, within the space of little more than one month by the repetition of full one hundred shocks of this terrific phenomenon of nature."

The Jellalabad Earthquake is here considered solely in its relations to science ; but it may be permitted me to turn for a moment from the cold record of physical phenomena, and to express the admiration all must feel at the noble conduct of that gallant band, whose moral courage rose superior to the depressing influence of such a series of convulsions at such a crisis, and whose physical exertions so rapidly obliterated their devastating effects, that their wondering foes could attribute the result only to some supernatural agency, to some English witchcraft.

The superior intensity of the Earthquake in the immediate vicinity of Jellalabad, and the incessant state of "*tremblement*" into which the earth there was thrown for so long a period after the great shock, appear to me to render it almost certain, that the focus of disturbing force was situated in that valley, and that the undulations generated were propagated East and West from some point in it as a centre. Most of the shocks subsequent to the great one of the 19th February were local, and a very few only were felt at Peshawur to the Eastward, and none in so far as I know to the Westward. The disturbing force to which the series was due, must therefore have been confined in its action to the valley of Jellalabad, and the effects would indicate, that its focus was at no very great depth beneath the surface of the earth, and that farther, a large amount of its power was expended on the 19th, since the other shocks were feeble in comparison with the one experienced on that day.

From the best information I can procure, the time at which the Earthquake was felt at Jellalabad was 11h. 40m. A. M. All the times subsequently stated, will be reduced to Jellalabad time, so as to shew correctly the progress of the shock. This correction was neglected in my notes formerly published, in consequence of the very great discre-

pancies among the periods stated by different observers, and the impossibility of their knowing which were correct. Information subsequently obtained, has, however, admitted of greater certainty as to time, and greater care is therefore requisite in combining the observations.

From Jellalabad, the shock affecting a portion of the Suffeid Koh range of mountains, with the numerous subordinate ranges that diverge from it, reached the town of Peshawur, (lat. $34^{\circ} 06'$; long. $71^{\circ} 42'$, E). From the circumstance of General Pollock's force having been encamped at Kawulsur, about eight miles from Peshawur, and the communication being uninterrupted, the details relative to the effects of the shock there, are fuller and more satisfactory than would otherwise have been the case.

The following extracts from letters published in the *Delhi Gazette*, give the most complete accounts of the effects of the Earthquake I have been able to find :—

Extract from a letter, dated Kawulsur, 20th February, 1842.

“Yesterday a fearful Earthquake visited this part of the world. The shock which came on———,* was long continued, and men, horses, tents, even the ground under us, and the hills in the distance, appeared to be moving. It was an awful visitation, and made every heart quake. In the direction of Peshawur, (eight miles distant,) clouds of dust appeared, which proved to have been caused by the falling of very many houses and buildings. A salute was fired from the battery at Jumrood, for the purpose of announcing the safety of Rajah Pertaub Sing, son of Maharajah Shere Sing, who is now at Peshawur, and of whom it is said he narrowly escaped death: the building in which he had been sitting came down almost immediately after he quitted it. The natives say a tenth of the city is down, and a number of the inhabitants killed.”

Extract from a letter, dated Kawulsur, 19th February, 1843.

“It is now about 12 o'clock mid-day, and we have just experienced a most awful Earthquake in Camp. The natives say that nothing so severe of the kind has been experienced in India for the last fifty

* The time stated being erroneous, is omitted. The times generally are still by no means so satisfactory as is desirable.

years. The earth literally trembled like an aspen leaf, and rocked to and fro as an infant's cradle, or like a ship at sea. Many of the camels that were carrying the baggage of the troops to Col. Wild's camp were thrown down, and so great was the shock, which lasted fully five minutes, that I was obliged to support myself by holding on to the camp furniture, and many of the officers fancied themselves suddenly taken ill. I expected every moment to have seen the earth open and swallow us up, and it is only by God's great and merciful providence that we have escaped through such an awful convulsion of nature.

"Every one complains of nausea. We have just been observing immense volumes of dust, that completely darken the atmosphere in the direction of the old rickety town of Peshawur, which is supposed to be nearly levelled with the ground, as the houses are but weakly built, being merely propped up by the beams of wood which may be observed placed in different spots under large walls and corners of the houses, and are even dangerous to passers-by at all times. I doubt not but to-morrow's dawn will bring us dreadful intelligence, and produce a fearful account of lives lost.—*20th February.* Reports say, that only from 40 to 50 persons at Peshawur were crushed and killed among ruins of the falling houses. General Avitabili's large dwelling house, which had recently been built, and was being finished, fell in, but luckily did no injury to any one in the house."

The period of the shock at Peshawur was 11h. 41m. 12s. Jellalabad time, the observed time at the former place being 11h. 46m. and the difference of longitude 4m. 48s.*

The course of the Earthquake hitherto has been through a tract of country rugged and mountainous in the extreme. The geology of the district extending from Cabool to Peshawur has never been satisfactorily described, and very little, I might indeed say nothing, whatever is yet known about it. Dr. Lord gives the following general remarks on the great features of the country, and some of the points alluded to by him, as indicating severe disruptive action, are interesting in con-

* Captain Lawrence, late Political Agent at Peshawur, assures me, he feels quite certain as to the period of the Earthquake at that place; he having been led to watch the time narrowly, in consequence of a meeting between General Pollock and Rajah Pertaub Sing being to take place at noon exactly, arrangements for which were in progress under his superintendence.

nection with the frequent occurrence of Earthquake shocks throughout the tract. The facts embodied in Dr. Lord's remarks, must be separated from the theoretical views with which they are associated, the latter being open to serious objections; but as there is reason to believe they are now under discussion by a very competent authority, it is unnecessary to allude farther to them here.

"A parallel of latitude," Dr. Lord remarks, "drawn through Kalabágh and west of the Indus would present a remarkable difference in the course of the mountain chains as observed to its north and south sides. In the latter direction, the Soliman and Kala ranges, the one of which may be looked upon as a continuation of the other, generally preserve an almost perfect parallelism with the course of the Indus; while on the other side every range, and they are numerous from the Himalaya and Hindu Kosh to the Salt range inclusive, are at right angles with the direction of the stream. In other words, the general line of the former is North and South, of the latter East and West. It is of the latter, and the country they include, that I would more particularly speak at present.

"In addition to the general course of the chains thus laid down, there is another fact, subordinate, yet of no less importance towards determining the physical formation of this part of the country. When the two mountain ranges have for some time preserved their parallel East and West course, the Northern is observed to deflect, or send off a branch towards the South, while a corresponding deflection or ramification of the Southern chain comes to meet it, and the plain which otherwise would have been one continued expanse from East to West, is thus cut into a number of valleys, the longitudinal axis of which, however, is still in general to be found in the same direction. If we conceive these valleys to be few, spacious, and well marked towards the North and South, while in the central or Cabul region they become small, numerous and crowded, so as to resemble a tangled maze or net-work, we shall have a just general conception of the tract of country west of the Indus, which may be familiarly described as lying between Cabul and Kalabágh.

"Unquestionable geological facts, such as the structure of igneous rocks poured out under strong pressure, the presence of fossil shells

&c. lead me to the belief that several, if not all of these valleys, were at some former time the receptacles of a series of inland lakes, and the natures of the shells found (principally planorbes and paludinæ) seem to indicate that the waters of these lakes had been fresh. In this manner three grand sheets of water, separated by the mountain deflections before alluded to, would appear to have occupied the entire country from Kabul to the Indus, and their basins may now be distinguished as the plains which afford sites to the three cities of Kabul, Jellalabad, and Peshawur.

“ The draining of these basins is tranquilly carried on by the Kabul river, which runs along the northern edge of each, conveying their united waters to the Indus : but in former times when more energetic means were necessary, the mountain barriers burst, and the shattered fragments and rolled blocks that now strew the Kyber Pass, bear testimony to its once having afforded exit to a mighty rush of waters, while the Gidur-Gulla (or Jackall’s neck,) a long defile east of the plains of Peshawur, clearly points out the further course of the torrent towards the bed of the Indus, whence its passage to the ocean was easy and natural.”

The questions in pure geology involved in these remarks I do not concern myself with, but I have quoted them to shew, that indications of powerful disruptive forces prevail throughout the whole of the course of the Earthquake of the 19th February hitherto described, and this point is all that circumstances admit of being established. Of the nature of the rocks composing the mountain masses between Cabool and Jellalabad, I have seen no account. Major Broadfoot states, that the rocks in the immediate vicinity of Jellalabad are gniess, and Sir A. Burnes mentions, that mica slate and granite are also found there. Relative to the rocks in the Kyber Pass, my friend Lieut. Goodwyn of Engineers, writes thus : “ The Kyber rocks are of flinty slate, varying in all degrees of hardness from flint to slate. Sometimes the rock is nearly one solid mass, the strata are so slightly defined, and they cannot be separated with a crow-bar—at other places, a blow of a pickaxe is sufficient to shiver it into fifty little cubes of slate ; a considerable quantity of earth lying between the strata, which falls down in dust. Sir Alexander Burnes says, “ The formation is a flinty slate overlying conglomerate, but

I have also frequently found the conglomerate overlying the slate, and they are frequently united in the same rock. The conglomerate is very hard, and we could not progress more than four inches an hour, with two-inch jumpers, in boring holes for blasting. The stones seem cemented with a sort of iron cement."

After leaving Peshawur, the shock traversing the alluvial plains of the Punjaub reached Ferozepore, (lat. $30^{\circ} 56' 50''$; long. $74^{\circ} 35'$;) where its force was still felt to be severe, though no longer destructive. No accounts have been made public of the effects of the shock at any place intermediate between Peshawur and Ferozepore. The latter place was reached at 11h. 48m. 40s. A. M. Jellalabad time.

The city of Delhi, (lat. $28^{\circ} 40'$; long. $77^{\circ} 16'$;) is the next place from which we have authentic intelligence of the effects of the Earthquake. The intensity of the shock was, however, very much diminished here, and beyond the motion of the ground no other effects are alluded to. The period of the Earthquake at Delhi, as stated in my notes formerly published, I find to be erroneous, and the proper time from the best information I have been able to procure, is 11h. 53m. 56s. A. M. Jellalabad time. Relative to the nature of the shock at Delhi, Mr. Sub-Conductor Bingham of the Sappers and Miners thus writes: "The total duration of the shock, which appeared to me to consist of several distinct undulations of the earth, but without perceptible intervals between them, could not have been less than five or six minutes. But of this I cannot speak definitely, as I had no reference to a time-piece during the shock."

About twenty miles to the South-west of the city of Delhi, at a village called Sonub, is situated a hot spring, of which the following description is given anonymously in the second volume of the *Gleanings in Science*, p. 34:—

"At Sonub near Delhi, there is a hot spring (sulphureous) which attracts from the surrounding country myriads of people for the purpose of bathing; the bath is constantly filled with as many people as it can hold, (except perhaps for a few hours during the night,) in the day time by men, and the night time by women; most of the inhabitants of the town itself are in the habit of bathing in it daily, and it is perhaps to this habit, that they are indebted for the cadaverous and

unhealthy appearance so common among them. The temperature of the spring in January last, (1829,) was 103° ; but it varies, for in July, 1826, I observed it as high as 110° . The flow of water also varies considerably." *

Dr. Malcomson of Bombay, having made enquiries of Dr. Falconer, late Superintendent of the Botanic Garden, Seharanpore, as to whether this spring was affected by the Earthquake of the 19th February, the latter referred the question to me, and I availed myself of the assistance of my intelligent and indefatigable correspondent, Mr. Bingham, in instituting enquiries on the spot. Mr. Bingham applied first to the Deputy Collector of the district of Goorgaon, in which district the spring is situated, but so little interest was taken by him in the matter, that he did not even reply to Mr. Bingham's letter. This indifference, on the part of the Deputy Collector, was, however, compensated for by the interest and activity, shewn by Mr. H. Martin, the Superintendent of Roads in the same district, who so soon as applied to by Mr. Bingham, visited the spring, and addressed the following interesting letter to me, giving the results of his enquiries :—

Letter from Mr. H. Martin to my address, dated 15th October, 1842.

SIR,—Having been requested by Mr. Bingham, to obtain for you what information I could on the subject of the alterations which took place in the hot wells of Sonub. I yesterday visited them, and have much pleasure in transmitting to you the results of my enquiries, which I trust will prove of utility to the object you have in view.

"On the 19th February last, (the day of the Earthquake,) the water in the wells became as cold as that of the ordinary wells of this country—the issue of the spring was observed to flow much slower, and in less quantities than formerly, and at times the spring would be completely dry. No disturbance of any kind was visible, nor any other change than what I have noticed. The above appearances continued for twenty-five days, when the wells resumed their former state.

"I would remark, that this statement may be credited, as all to whom I applied answered with readiness, and from the length of time which the appearances lasted, there could hardly be a mistake.

"Should you wish for any more detailed particulars, or if I could be of any assistance to you in any way on any other subject that may

relate to this district, I shall be most happy in furnishing you with all the information I can procure." I am, &c. &c.

H. MARTIN.

In continuation on the same subject, Mr. Bingham writes under date 1st Nov. 1842 :—

"I wrote some time ago to Mr. Martin, for information regarding the locality of the 'springs, and it appears from his reply, that they are situated within 200 yards, (but he does not state whether on the East or West side,) of a range of low hills, which I have myself formerly traced from where they cross the Jumna, about two miles to the north of Delhi, running in a southerly direction beyond Muttra.* There are no rocks in the immediate neighbourhood of the hot springs, but the hills are principally composed of a very hard stratified quartz stone, the strata dipping at an angle of 70° or 75°, with numerous vertical cracks and fissures through them, as if they had been suddenly and violently heaved up.

"There is also here and there a stone of different formation found lying upon the quartz; in some places, it is merely '*bujree*' (red sand,) in others a soft red sandstone. The city of Delhi is mostly built upon these rocks, and some years ago when employed in blasting to form a ditch for one of the bastions on the south side of the city, I had often occasion to remark the impressions of the roots and fibres of vegetable† in the same stone; but in the quartz rock, I never met with any foreign substances, except some slight traces of a metallic nature, which appeared to me to be zinc or copper."

As the Sonub hot spring in all probability rises through one of those fissures so common in the vicinity, the effect of the earthquake seems to have been to close this exit of the waters temporarily, as the supply diminished so much immediately afterwards. And the diminution of the supply would lead to the water becoming colder in consequence of its exposing a lesser bulk to the cooling influences of the strata

* These are the Aravulli range of hills, which abutting on the Western termination of the Vindyas, run up through Rajpootana, and are lost at some little distance to the Northward of Delhi.

† The nature and relations of this sandstone render it probable, that these vegetable forms were not the remains of actual vegetables, but were those dendritic forms of doubtful origin so common in similar circumstances.

through which it passed. The obstacle in the path of the waters, whatever its nature may have been, appears to have been wholly removed at the end of twenty-five days, as then the temperature and quantity of the water returned to its usual standard.

Continuing to the Eastward of Delhi, the next place from which intelligence was received relative to the effects of the shock, was Poojnah, a station on the Doab Canal, (lat. $29^{\circ} 32'$, long. $77^{\circ} 27'$?) where Sergeant and Assistant Overseer Renny observed and communicated to me the following detail :—

Extract of a letter from Sergt. Renny, dated Poojnah; 19th Feb. 1842.

“ I also beg leave to inform you, that we felt a very severe shock of an Earthquake here at — *. It lasted about three minutes with intervals. My whole family felt it as well as the people about my place, who came running to me much alarmed. It was first noticed I believe by myself, as I was then sitting writing, and found a heavy table on which my desk was laid, much agitated, which I thought was caused by some one moving; but I soon found my chair in motion also, and on looking about, I perceived every thing moveable in the room in a state of agitation. A few hours before this, I observed the water in the canal was unusually muddy, and after the shock was over, I went to look and found it much disturbed by a high swell, whether occasioned by the shock or not, I cannot say.”

Sergt. Renny is entitled to my best thanks for these interesting details. The unusual muddiness of the canal could not possibly have been due to the influence of the Earthquake, since the direction in which the shock travelled was against, not coincident with that of the current in the canal, hence the disturbance of the silt in the bed of the canal could not *precede* the shock; but it is quite possible, that the high swell observed *after the shock had passed*, may have been occasioned by it. The time of the shock at Poojnah was, as nearly as I can estimate it, Oh. 00m. 12s. P. M. Jellalabad time.

From Poojnah, the shock travelled to Saharanpore, where it was just felt, but attracted no particular attention. It was next experienced at Kulsea, another station on the Doab Canal, about twelve or fourteen miles to the Northward of Saharanpore, where its effects

* The time stated being erroneous, is omitted.

were very perceptible. The motion here, as described to me by Mr. Sub-Conductor Pigott, was of the same undulating character as observed throughout, but its duration was certainly not greater than one minute. Immediately on perceiving the shock, Mr. Pigott examined the sun-dial, and making a slight allowance for the error of the dial, and that for the longitude of the spot which has not been determined, the true period appears to have been very nearly 0h. 03m. 44s. P. M. Jellalabad time.

My camp was pitched about two miles North-west of Kulsea on the South bank of the Nowgong Row, (or stream,) but so feeble was the intensity of the shock, that although I was conscious of some peculiar motion at the time, it never occurred to me that it arose from an Earthquake, and it had passed from my mind till recalled by Mr. Pigott's account of what had been felt at the same time at Kulsea.

Mussoorie, in lat. $30^{\circ} 30'$, long. $78^{\circ} 10'$ *, forms the most easterly limit of the Earthquake of the 19th February, in so far as my information extends. A merely incidental notice, in a Meteorological Register kept by Major Aitchison at Mussoorie, informs me of its having been experienced there. The shock, however, appears to have traversed a large portion of the Himalayan chain, since I am informed by Capt. Hutton, that it was felt at Shalkur on the borders of little Thibet, by Lieut. D. Cunningham of Engineers.

It therefore appears from the preceding details, that the tract affected by this Earthquake is, so far as determined by authentic intelligence, extended from the 69th to a little beyond the 78th meridian of East longitude, and from between the 34th and 35th to between the 28th and 29th parallels of North latitude. The superficial area thus affected, amounts to nearly 216,000 square miles, and within it are included mountain masses of great extent, varying from 2 or 3,000 to 10 and 12,000 feet in height above the level of the sea.

The general course of the shock was from East to West, parallel with that of the range of the Himalayas. Its mode of propagation appears to have been analogous to that of the waves generated when a flexible piece of metal or other substance is seized at one extremity

* The geographical positions of places in India are taken from the table of latitudes and longitudes published in Rushton's Gazetteer. They are not always strictly correct.

and shaken violently. A succession of waves flow along the course of the disturbed body, following each other rapidly, until the moving force is withdrawn, and thus it appears to have been with the Earthquake under review. A series of great waves were generated on the 19th, and propagated, with an undulatory motion to a great distance, and series of smaller ones continued for upwards of a month afterwards to be continually formed, but propagated only to a very limited extent, but all in the same direction with the first mentioned.

As some remarkable instances of disturbance of the magnetism of the earth are recorded to have occurred during Earthquake shocks, it struck me that similar phenomena might possibly have been observed on the present occasion at the Simla Magnetic Observatory, and I therefore wrote to Major Boileau of Engineers, the Superintendent, on the subject, and he was kind enough to reply as follows, under date 5th November, 1842:—

“The magnetometers have been watched with great care during (*i. e.* on and after) the occurrence of Earthquakes, and there never has been any disturbance in their mean readings, though the mechanical effect has been apparent by the vibrating motion communicated to the instruments. The delicacy of our magnetic instruments is such, that a movement equal to two seconds of arc would be detected immediately, and I hold the total absence of any such indications, as almost amounting to proof, that Earthquakes are not magnetic phenomena.”

If the observations at the Simla Observatory are to be held as decisive on the point, then certainly it is a just inference, that no connection exists between Earthquakes and disturbances of terrestrial magnetism; but as these observations may be opposed by numerous others indicating distinctly I think, such a connection, although the precise nature of it is yet mysterious, Major Boileau's inference must be looked upon as premature, and his observations prove, it appears to me, nothing more than, that at Simla, the Earthquakes have hitherto produced effects only mechanical, but it by no means thence follows, that Earthquakes generally are not in any respect magnetic phenomena. The question is still an obscure one, and the observations which have led to the impression that the causes of Earthquakes are connected with terrestrial magnetism have been made chiefly in districts where volcanic forces are in actual operation, and where the

causes of Earthquakes, whether of terrestrial or atmospheric origin, are in full activity, circumstances to which no analogy is presented at Simla, since I am not aware of there being in the vicinity of that place, one single proof of active volcanic agency. The question will doubtless be farther elucidated ere the labours of the various magnetic observatories are closed, but it is unnecessary to dwell longer upon it now, as it will again come under notice at a subsequent period.

The following table presents a general view of the course and phenomena of the Jellalabad Earthquake, and with it, the account of this remarkable event will be closed:—

TABLE.

Places affected.	Geographical Position.		Period of Shock.	Time from point of greatest force.	Approx. Distance in degrees of Long. from point of greatest force.	Remarks.
	Lat.	Long.				
Cabool, ..	34° 30' 30"	69° 7'	Not specified.	..	..	Shock very severe.
Jellalabad,	34 25	70 50	11h 40m 0 ⁰ s	..	..	Point of greatest force.
Peshawur, ..	34 06	71 42	11 41 12	0 1 12	1 12	Shock, very severe.
Ferozepore,	30 56 50	74 35	11 48 40	0 8 40	4 05	Shock, smart.
Delhi,	28 40	77 16	11 53 56	0 13 56	6 46	Ditto do.
Poojah, ..	29 32	77 27 ?	0 00 12	0 19 12	6 57	Ditto do.
Saharan- } pore, ... }	29 57	77 32	Not specified.	..	7 02	Shock, slight.
Kulsea, ...	30 08	77 34	0 3 44	0 23 44	7 04	Shock, very slight.
Mussoorie, .	30 30	78 10	Not specified.	..	7 40	Shock, smart.

2. EARTHQUAKE OF THE 5TH MARCH, 1842.

On the evening of the 5th March, 1842, a very severe shock of an Earthquake was experienced at several stations in the North Western Provinces, about 9 o'clock. Judging from its effects, it appears to have emanated from the foot of the Himalaya, since the stations in and near the hills were much more seriously affected than those at a distance from them. Thus the effects of the Earthquake at Mussoorie, (lat. 30° 30', long. 78° 10'), about 7,200 feet above the level of the sea, were much more severe than at Saharanpore. In Major Aitchi-

son's Meteorological Journal, the following details of the shock are given :—

“5th March. Thermometer at sunrise 62°, wind East. Thermometer at sunset 58°, wind as in the morning, weather clear. At ten minutes past 9 p. m. a most violent shock of an Earthquake, which lasted about a minute Colonel Young's house at Deyrah was much injured, also Major Thompson's at Mussoorie, and Lord Henry Gordon's at Landour was rent from top to bottom,” venetian blinds also rattled strongly, lamp glasses were violently shaken, and the oscillations causing these effects appear to have come from North to South.

The motion of the Earth from all accounts appears to have been horizontal, and the nature of the shock was wholly distinct from that of the preceding Earthquake; all who experienced both assuring me, the difference was perceptible to them at once. The effect in the present instance, instead of being like the rounded swell of a fluid or viscid mass, was sharp and sudden, like the effect of a concussion than of an undulation, and seemed indeed to be a much magnified “jarr,” similar in kind to that experienced by the hand when a hammer held by it is struck on a hard unyielding body. One intelligent friend who was in his study when the shock occurred, described his sensations to be, as if he and his chair had received a sudden and severe blow from behind, and been both; impelled forward, and this appears to have been the characteristic of the shock.

The following interesting details of the Earthquake as experienced at Berkeri on the Doab Canal, were communicated to me by Sergt. and Overseer J. Petrie, to whom I feel much obliged for his trouble in preparing them :—

Letter from Sergt. J. Petrie to my address, dated 5th March, 1842.

SIR,—We had a very smart shock of an Earthquake here this evening at about 9 o'clock: so much so indeed, that every thing in this bungalow shook and rattled again. I had just laid down to rest with a book in my hand when it came on, and I started up and called out for assistance, thinking the house was coming down. Every one about the place felt it, and came running to me. I found the South door of the inner room, which I had bolted before I went to bed, had been forced open by the bolt falling down. Indeed every thing in the house

shook, and I was very much afraid of its falling, after having read the accounts from our Army near Peshawur. At that place a number of houses have been destroyed, and many lives lost from the last Earthquake.

“Although this shock did not last so long as the one of the 19th of last month, in my opinion it was much more severe for the time.

I am, &c. &c.

J. PETRIE.”

The rate of propagation of this shock appears to have been very rapid, as no perceptible difference in its period of arrival was observed at any of the following stations; namely, Simla and Mussoorie in the Himalayas, Deyrah in the Deyrah Dhoon, Saharanpore and Berkeri. The nature of the shock would indicate that the seat of the disturbing force must have been within the rocky crust of the earth, or at a very small distance indeed beyond it, as such a supposition accounts best for the peculiar “jarring” sensation characteristic of the shock. All who experienced the Earthquakes of the 19th of February and 5th of March, concurred in opinion, that they came from opposite directions, and as the former was from West to East, the latter must have been, as before stated, from North to South, and this is in some measure confirmed by the fact stated in Sergt. Petrie’s letter, that the Southern door of the inner room of the Berkeri canal bungalow was driven open by the shock, as it would receive the first impulse.

3. EARTHQUAKE OF THE 21ST OF MAY, 1842.

The Earthquake of the 21st of May, experienced in the Lower Provinces, appears to have been only a slight shock, and its direction, in so far as this can be determined from the facts communicated, was from South-west to North-east. The most Westerly point from which I have received any intelligence of its effects is Juanpore, a station about forty miles to the North-west of Benares, the latter being in lat. $25^{\circ} 30' N.$, long. $83^{\circ} 1' E.$

The following letter from Vincent Tregear, Esq. furnishes an account of the shock as felt at Juanpore:—

Juaupore, 29th May, 1842.

“DEAR SIR, I have to-day received the Journal of the Asiatic Society, No. 123; and as you invite communications regarding Earthquakes, I hasten to inform you, that a slight shock was felt here on the 21st inst. between the hours of 8 and 9 A. M. I did not, I regret to say, note the time, because I found that no one else in the house noticed the shock. In the evening I met Mr. Tulloh, who asked me if I had ‘felt the Earthquake?’ shewing that it was not mere imagination on my part. The motion seemed to be North and South. It was in reality nearly vice versâ,” but without reference to some standard indicator of direction, it is impossible from mere sensations to tell the direction of a shock correctly.

“The weather,” Mr. Tregear continues “here is exceedingly oppressive, and if such a state of the atmosphere can be considered as prophetic, I think we have more natural or unnatural convulsions at hand. It is more than possible that chemical or mechanical changes in the interior of the earth have great electrical influence on the surface; and these changes may be accompanied by perceptible vibrations.* * * * *

Faithfully yours,

VINCENT TREGEAR.”

I shall have occasion in another part of this memoir to allude to some interesting atmospherical phenomena which have been found to accompany Earthquake shocks, but as this Register is intended to be simply narrative, I do not at present make any comment on Mr. Tregear’s remarks.

The next place from which we have any record of this Earthquake having been felt is the city of Patna, in lat. 25° 37' N. long. 85° 15' E. Our information is limited to the following extract from the *Calcutta Englishman* of the 28th of May:—

“A letter from Patna,” the Editor states, “mentions that a smart shock of an Earthquake was felt there at 8h. 36m. A. M. on the 21st instant.”

The shock travelled next to Darjeeling, in lat. 27° 00' N. and long. 88° 25' E., and situated at a height of about 7,000 feet above the level of the sea. The following letter from Arch. Campbell, Esq. Superintendent of Darjeeling, gives details of the shock as experienced at that place:—

Darjeeling, June 4th, 1842.

MY DEAR SIR,—I have seen your account of the Earthquake of the 19th of February last in the last number of the Journal of the Asiatic Society, and in compliance with your desire therein expressed to be furnished with notices of Earthquake shocks occurring in all parts of India, I have to inform you, that a slight shock was experienced at this place on the morning of Saturday, the 21st of May last, at or nearly about 10 minutes past 9 o'clock A. M. I call the shock a slight one, because it was not sensible to every person at the station, and because there was no damage done to houses or other property. It was experienced by a person in my house, although I was not aware of its occurrence. I was engaged dressing at the time, and standing, while the other person was sitting in another room reading. The sensation is thus described: "I was seated on a chair opposite to the fire when I felt a hitching motion sideways. This was repeated two or three times, and was not accompanied by any noise." The chair was placed East and West, so that the course of the shock would appear to be North and South; but whether from the South to the North, or vice versa, the person describing it cannot say. A gentleman at the Hotel, one mile North from my house, describes the shock as having been more severe. He was also dressing at the time, and staggered into his bearer's arms, after which he had a feeling of nausea which continued for some hours. At Mr. Maddock's house, one and half mile to the South of mine, the shock is described as having been more violent than it was felt at my house, or to the North side of it.* * * * * Your sincerely,

To R. Baird Smith, Esq.

A. CAMPBELL.

I have had frequent cause to be indebted to Dr. Campbell for details of Earthquakes experienced at Darjeeling, and I take this opportunity of acknowledging my obligations to him, not only for the assistance he has afforded me, but also for the general interest he has taken in the subject.

Correcting the time at Patna for difference of longitude, and assuming that observed at Darjeeling to be, have

	h.	m.	s.
Time of shock at Patna, . .	8	48	40
Time ,, at Darjeeling,	9	10	00
Difference,	0	21	20

4. EARTHQUAKE OF THE 4TH JULY, 1842.

A report of an Earthquake on the 4th July, was communicated to me by Sergt. Buttress, Overseer on the Delhi Canal, through Capt. Baker of Engineers. No other notice of this Earthquake has reached me, but Sergt. Buttress gives the details so circumstantially, that I can scarcely think he was mistaken, and the fact of his being the only one to communicate an account of it, is in no degree remarkable, since the interest in natural phenomena generally is in this country confined to a very limited circle, and numbers of these pass without any record at all. On the authority of Sergt. Buttress' letter, I therefore include this Earthquake in the Register.

Letter from Sergt. Buttress to Capt. Baker, Engineers, without date.

SIR,—As some gentleman of Engineers, whose name and address I have forgotten, has solicited information of any Earthquake that may take place, I beg leave through you, Sir, should you be acquainted with the name and address of the gentleman, to forward the following notice of one that took place at Chotah Thannah, on Monday the 4th of July, at 10 minutes to 3 o'clock P. M. by my watch, which I have since ascertained by the mid-day gun at Delhi, to be five minutes too slow, so that the time was five minutes to 3 o'clock.

It lasted about thirty seconds, and was accompanied by a rumbling noise, exactly like one of the water mills in Delhi. The motion was a violent trembling, and the direction seemed to me to be from West to East. The whole day had been dreadfully close, and scarcely a breeze blowing; but in the evening the wind rose, and has been very fresh. From yesterday up to the present moment, a dust storm has been blowing from the North-west. I have, &c. &c.,

W. BUTTRESS, *Sergt.*

Ovr. C. D.

5. EARTHQUAKE OF THE 21ST JULY, 1842.

The Earthquake of the 21st July was experienced at Jellalabad, and the following extract from the *Agra Ukbar* of the 4th August, gives the only notice of it that has appeared. "A severe shock of an Earthquake was experienced at Jellalabad on the 21st July 1842, at a little

past 9 P. M. A reduction of temperature followed it." I am not aware whether or not this shock extended beyond the valley of Jellalabad. The perceptible reduction of temperature which followed it, is the only point of interest connected with this shock.

6. EARTHQUAKE OF THE 25TH JULY, 1842.

The immediate vicinity of Delhi alone, appears to have been affected by the shock of the 25th July. How far its effects may have extended, there are no precise data for determining, but it was evidently a merely local convulsion, and probably was felt only within fifteen or twenty miles around the city. The following Extract from the *Delhi Gazette* of the 27th July, gives an account of the phenomenon :

"A smart shock of an Earthquake, accompanied by a loud rumbling noise, woke the inhabitants of Delhi from their sleep at about a quarter to four on the morning of the 25th. It did no damage that we have heard of."

7. EARTHQUAKE OF THE 7TH SEPTEMBER, 1842.

This Earthquake was experienced at Mussoorie in the Himalayas. The shock was very slight, and occurred during a severe storm at 1h. 58m. P. M. The nature of the Earth's motion was vertical, and the vibration single. The direction appeared to be from West to East, the duration of the shock was estimated at five seconds. It was not, to the best of my knowledge experienced in the Deyrah Dhoon, or any where in the Plains, as might have been anticipated from the slightness of the shock at Mussoorie.

Having been informed that at the moment of the occurrence of this Earthquake, Dr. Anderson of the Horse Artillery, had experienced sensations precisely similar to those accompanying an electric shock, I felt anxious to verify this interesting fact, and accordingly wrote to Dr. Anderson on the subject, who obligingly favoured me with the following reply :—

Letter from F. ANDERSON, Esq. to my address, dated Mussoorie, 21st November, 1842.

MY DEAR SMITH,—I certainly thought that at the time of that slight Earthquake, with the movement, that I also experienced a slight electric shock extending from the left elbow to the fingers. I was then up at “Rochville,” at the very extremity (East end) of Landour. I was in the room with Mundy and two ladies, one of whom I was seated close to, she and I felt the movement distinctly, the others did not. *I alone* was conscious of the electric feeling. * * * * *

Yours very sincerely,

F. ANDERSON.

Electric shocks frequently have been felt during Earthquake shocks, and it is interesting to find this phenomenon accompanying such event in India, as well as elsewhere.

8. EARTHQUAKE OF THE 18TH SEPTEMBER, 1842.

The Earthquake of the 18th September was experienced at Darjeeling, and from that station only has any notice of it reached to me. The following extract from a letter from Dr. Campbell, furnishes details of the shock as experienced at Darjeeling:—

“On the morning of the 18th September, 1842, at half-past 4 o’clock, as nearly as I can determine from the comparison of watch times given by three gentlemen with the time by sun-dial and their watches on the following day, there was a smart shock of Earthquake felt at Darjeeling. Two of those gentlemen, who have given me particulars of their sensations, say, that it appeared to them to have come from the North-west and passed under them to South-east. The third says, he felt it as an “up and down” shock, and, that the movement of the earth was sensible for some seconds after it was evident that the shock had

Assuming the direction stated to be correct, it is not improbable that this shock emanated from the valley of Nepaul, the seat of the great Earthquake of 1833. But this of course is merely a conjecture, as evidence is wanting to warrant more.

9. EARTHQUAKE OF THE 26TH SEPTEMBER, 1842.

This shock was experienced at Delhi, and like that of the 25th July, appears to have been strictly local in its character. It is described as "a very smart shock of an Earthquake, accompanied by a tremendous rumbling, and lasted not less than two or three minutes." It occurred about 9 A. M., and Mr. Bingham informs me, its direction was apparently from W. to E.

10. EARTHQUAKE OF THE 27TH SEPTEMBER, 1842.

The vicinity of Delhi was the seat of this Earthquake also, which was slight in its character, and came in the same direction as the preceding. Beyond the movement of the Earth, no other effects were perceptible.

The repeated local shocks to which the neighbourhood of Delhi is subject, prove distinctly, that a focus of active Earthquaking force is situated close by it. And in looking for the locality of this, I have no hesitation in fixing it in the Aravulli range of hills which skirt Delhi, and run in a South-westerly direction from it. The occurrence of the hot springs at Loweah, the disrupted state of the rocks composing the range, the occurrence of secondary trap in abundance, all shew that disturbing forces have existed, and still do exist there. I am confirmed in this opinion, by the result of Mr. Bingham's observations, who has informed me, that all the different local shocks of Earthquake experienced in Delhi, appeared to him to emanate from this range of hills. The limited extent over which the shocks are felt, shews, that the seat of the disturbing force cannot be far from the surface of the earth, while their comparatively feeble intensity proves, that the force itself cannot be of a very energetic character. I shall have occasion in a subsequent part of this memoir to shew grounds for inferring, that its effects being the standard of comparison, the disturbing force has diminished perceptibly in energy within the last few centuries. To say whether the force emanates from a central point, or whether it acts on a line of some extent is impracticable, with observations indefinite as those hitherto furnished; but if instruments for recording Earthquake shocks are ever employed in India, Delhi ought to be one of the places

selected for establishing them at, and from their indications these and other points of interest may be determined.

11. EARTHQUAKE OF THE 23D OF OCTOBER, 1842.

This Earthquake was experienced at Gowahatty, Assam, in lat. $26^{\circ} 00'$ N. and long. $90^{\circ} 40'$ E., and at Chittagong in lat. $22^{\circ} 22'$ N. and long. $91^{\circ} 42'$ E. At the former place its effects are thus described by a correspondent of the *Friend of India*: "Oct. 23. Between 8 and 9 o'clock A. M. there was a shock of an Earthquake; the motion was tremulous, and lasted about half a minute." From Chittagong another correspondent of the same paper writes; "we had another Earthquake here; not so severe as the last on the 23d ultimo. The motion was in the opposite direction (*i. e.* from East to West) and stopped one of the above-mentioned clocks which vibrate N. and S. at 9h. 42m. A. M."

It is stated that most, if not all, of the Earthquakes experienced in Assam came from the Eastward. It is therefore probable, that a centre of active force is situated somewhere here in the Singhpho or Eastern extremity of the Naga hills, which bound the province on the East. I am too imperfectly acquainted with the localities in question to be able to say whether there are any physical or geological facts that throw light upon this idea, and it is suggested only by the uniform regularity of the direction of the shocks.

12. EARTHQUAKE OF THE 25TH OF OCTOBER, 1842.

This was experienced at Jellalabad at half-past 1 A. M. It is characterised as severe but it appears to have been one of the local shocks so frequently felt throughout the valley in which that city stands.

13. EARTHQUAKE OF THE 29TH OF OCTOBER, 1842.

The Earthquake of the 29th of October was felt at Gowahatty, Assam, and forms an exception to the general rule as regards direction before stated, since the vibrations travelled from North to South. The correspondent of the *Friend of India*, before quoted, thus describes

the shock : " October 29th. At half past 7 P. M. a second shock occurred. The motion was from North to South, as appeared by the liquids in decanters on the dinner table. The shock was gentle, and the motion lasted about half a minute, when it was gently repeated."

14. EARTHQUAKE OF THE 6TH OF NOVEMBER, 1842.

This was another of the local Delhi shocks, and was experienced at 1h. 30m. P. M., on the 6th November. Mr Bingham in communicating its occurrence to me remarks, that it makes the eighth shock experienced in Delhi during the year. Five of these are recorded in this Register, two occurred before it was commenced, and the eighth was probably that of the 5th of March, although no notice of its having been felt there has reached me. Out of these eight, six were local and primary shocks, emanating from a focal tract in the immediate vicinity of the place, while the remaining two were secondary, and transmitted from distant and distinct centres.

15. EARTHQUAKE OF THE 11TH OF NOVEMBER, 1842.

The Earthquake of the 11th of November, one of the severest that had been felt for years, was confined in its influence to the Lower Provinces. Its effects at Calcutta will first be detailed, and its course then traced Eastward and Westward from that place.

I place the following Extract from a letter from H. Piddington, Esq. first among the notices of the shock at Calcutta, because it furnishes the most accurate and trust-worthy information relative to the period and direction of the shock as experienced there. * The time, as given by Mr. Gray, namely 9h. 38m. P. M. will be assumed for comparison with the times at other places, and these will all be reduced to Calcutta time.

Extract from a letter from H. PIDDINGTON, Esq. to my address, dated 24th November, 1842.

" I learn from the watchmakers (Mr. E. Gray, the first in his profession here,) that the true time of the shock was 9h. 38m. Its direc-

tion, from the swinging of pendulums, was from about E. N. E. to W. S. W. If I hear any thing more, I shall not fail to note it for you, and I add at bottom a copy of our note made at the meeting. I was acting as Secretary for Mr. Torrens, and it did not occur to me to examine the Barometer; but I found no difference afterwards at home, and a friend who has an excellent simpiesometer assures me, that no effect was produced upon it, he having examined it immediately afterwards, so that in slight shocks the atmosphere seems to have no share.

Yours very faithfully,

H. PIDDINGTON.

The note alluded to above by Mr. Piddington, as having been made at the meeting of the Asiatic Society, is as follows: "At ——* the proceedings of the Society were interrupted by two or three slight vertical shakes or heaves of the Earth, with a noise like the rumbling of a passing carriage, and one strong horizontal shake from East to West, or from N. E. to S. W. The whole took place within about a minute of time."

(Signed) H. T. PRINSEP, *President*.

The following extract from a letter from J. McClelland, Esq., gives some further details of interest, and shews that the Barometer was seriously affected during the shock: "With regard to the Earthquake of the 11th November, the only information I am able to give you that has not appeared in the Calcutta papers is, that the mercury rose and fell repeatedly, to the extent of seven or eight tenths of an inch during the shocks in a Barometer on the second floor of St. Xavier's College, a house in Chowringhee. The inmates of which house also describe the water in a large pond, of about three hundred yards in length and seventy in breadth, extending lengthways North and South, to have risen into considerable waves. This was also the case with the River, which appeared agitated, as if a steamer had passed. This refers to the river at the Botanic Gardens, where it is not half so broad as it is at Calcutta. A clock in the house of the Superintendent of the Garden, which had gone regularly for years, stopped suddenly during the shock. I observed three distinct shocks, they seemed to me to be rather a tremulous motion than a waving in any one direction; but

* Time omitted as erroneous.

others observed a distinct direction of the shock ; however, people are not all agreed as to what this exactly was. Probably the form of different masses of building, such as our houses in Calcutta, might occasion some little difference in the effects of the Earthquake on the sensations of different persons."

A remarkable luminous appearance of the water in the river, as observed on board the ship *Southampton*, is thus described by a correspondent of the *Englishman* of November 14th.

"Several gentlemen had just before the time been conversing upon the poop, when one pointed out the very singular luminous appearance of a portion of the river water : its Southern limit setting from N. W. towards Chaudpaul Ghaut. It was thought at first to be merely the first ebb of the tide setting down, or from the reflection of the moon, but it proved in the sequel not to be the first, and the moon was just then densely obscured by clouds, proving that also not to be the cause. On this brightness closing upon the ship, a general and severe tremor was felt throughout, as if a taut chain cable was grinding under the keel, or that a sudden squall had struck the ship. The Barometer had slightly fallen previous to this, whether from the preceding rain or caused by the Earthquake it is for others more capable to judge : I am inclined to think from the latter. From enquiries amongst several commanders, it appears, that amongst the northermost ships it was more severely felt, even to the shaking of the chain cables and cabin furniture.

"At Howrah also, we find the shock was violent in the extreme. We may therefore infer that the direction of the Earthquake must have been from N. W. to S. E."

It is stated by a correspondent of the *Englishman* of the 14th Nov., the night of the 11th was particularly close and oppressive in Calcutta. The meteorological registers kept at the Surveyor General's Office and the Honorable Company's Dispensary, present nothing remarkable farther than that rain fell on the evening of the 11th to the amount in the lower gauge of 0.14, and in the upper of 0.19 inches, none having fallen for sometime before.

The effects of the Earthquake at Serampore, about fourteen miles above Calcutta, (lat. 22° 45' N. long. 88° 26' E.) are described in the following extracts :—

In the *Friend of India* of the 17th Nov., it is stated in the weekly summary of events, that on the evening of the 11th Nov. at about 9h. 50m. or 9h. 45m. by the town-clock, a very severe shock of an Earthquake was experienced at Serampore. "It was accompanied by a noise which at first resembled some "mighty rushing wind," and then the loud rattling of carriages over a stony street. The shock came from the Eastward: the clocks of which the pendulums vibrated from North to South were stopped, while those which stood East and West continued going. So violent a shock has not been experienced in this part of the country for the last twenty-five years. There was an unpleasant stillness in the air previous to this occurrence, but the wind rose strongly from the Eastward almost immediately afterwards."

In the *Bengal Hurkaru* of the 14th of Nov. the following details are given: "On Friday the 11th instant, at about a quarter before 10 P. M. two severe shocks of an Earthquake were felt at Serampore. They were preceded by a rumbling noise from the N. E. towards S. W.; the undulation was very great: all the houses at the place were shaken, and those persons who had retired were obliged to jump out of their beds, and some even quitted their houses, but through the mercy of Providence, no injury was done. The Brahmans as usual were busy with their shaunks and drums. The Earthquake lasted about four or five seconds."

In the other notices of the shock at Serampore which I have received, there are no new facts, so that I do not insert them. The time stated above is, I believe, incorrect, and considerable difference of opinion exists as to the duration of the shock. Such difference always will exist, so long as mere sensation is made the measure of duration, and proper instruments alone can remedy this imperfection.

Darjeeling is situated within one minute Eastward of the meridian of Calcutta, and I therefore give next, a notice of the shock as felt there. For this I am indebted to Dr. A. Campbell.

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*Letter from DR. CAMPBELL to my address, dated Darjeeling, 18th
November, 1842.*

"On the night of Friday the 11th instant, we had a shock of an Earthquake at this place. Although not in bed or asleep at the time it occurred, I was not conscious of it. Still it was, a smart shock, accord-

ing to the accounts of those who experienced it. The ghurree at the Treasury Guard struck 10 o'clock, as the shock was felt by many persons, and one gentleman looked at his watch and found it was ten minutes past 10 p. m.—suppose, as there is no way of getting the exact time of the shock's occurrence, that it happened at 5 minutes past 10 p. m. It was so severe as to bring down pieces of plaster from the walls of "Caroline Villa" and "Mount Pleasant;" and the shock was succeeded soon after by a slighter one, or perhaps it was but one shock with a remission in the vibration. One person thought it came from the South and passed on to the North. I account for the shock not having been felt at my house where there was a party of seven at the time, from its being constructed of wood, which from its greater elasticity is not to be shaken to the same extent as a pile of bricks or stone.

Yours, &c. A. CAMPBELL.

The following extract from the *Englishman* of the 16th Nov. details the effects of the Earthquake as experienced at B——, a place fifty-five miles East of Calcutta.

"Arrived at B—— (fifty-five miles East of Calcutta on the Isamutta or Jaboona) at half-past 5 a. m. 12th Nov. and found Mr. —— and his family still in great alarm from the Earthquake, which they had experienced there on the previous night. Mr. —— told me that immediately his family had retired at half-past 9, his dogs and those of the neighbouring village began howling, and shortly after was a loud rumbling, similar to that of carriages going over a draw-bridge. The commencement of this was followed by a violent undulation of the ground from North to South which actually rocked the house, and ended by three or four hard shocks which threw open all the doors and windows previously shut in for the night. The house (a puckah-built upper-roomed one) cracked, and the plaister from several of the walls and ceilings was thrown down. On examining the house by daylight we found rents in several of the walls and arches of the house, and the verandah to the East separated from it. Mr. —— considered the Earthquake, from the first hearing of the rumbling noise to the last shock, to have occupied about one minute of time.

I was on the road to B —— in my palkee, in the first stage from Barraset, and did not feel the Earthquake, but I noticed at 8 p. m. to

my wife who was with me, that the weather was unusually warm, cloudy and threatening heavy rain: she called out to me about half past 9, that it thundered, and we had heavy rain on the road from half past 8 P. M. to 2 A. M.

It did not rain at B — during the Earthquake, but it did so the preceding afternoon from 3 to 5 o'clock, and the weather all day had been sultry; the same was experienced in Calcutta.

Mr. — 's Pundit arrived at B — at 10 A. M. on Saturday the 12th. He was in a boat in the Soonderbuns, and stated that the waters were much agitated, and his boat was tossed about as if by waves in a squall of wind."

The Editor of the *Englishman* appends to the above the following note:—

"We learn from another quarter, that the shock of the Earthquake was severely felt on board the *Agincourt*, about fifty miles South-east of the Floating Light at 9h. 30m. A. M."

At Acra on the bank of the Hooghly, about five or six miles below Calcutta, the shock seems to have been very severe. The house of Mr. Greenfield there~~as~~ is represented as having been rent from top to bottom in twenty different places. He states, "it was so severe that the doors rattled so that you could not hear yourself speak, and the mortar from one end of the house to the other was flying down in handfulls. We had four shocks, three first and one about a quarter of an hour afterwards: empty bottles were broken at the mill, and the pigs and fowls, ducks, geese, dogs and horses made a most hideous noise. A little more and all would have been down, as the beams began to start."

At Pubnah (lat. 24° 32' N. long. 89° 12' E.) the shock was experienced at 9h. 47m. Calcutta time. Another slight shock occurred at 10h. 30m. C. T. The direction here was from S. W. Two indigo boiler chimneys and that of a rum distillery were thrown down, and the banks of the river in front of the distillery are said to have been fissured. The correspondent of the *Englishman*, however, who gives these details of the effects of the shock, is so remarkably facetious, that suspicions of exaggeration are excited.

At Barrisaul (lat. 22° 45' N. long 90° 11' E.) the shock appears to have been felt at very nearly the same time as at Calcutta, the period being 9h. 38m. 12s. C. T.

The following letter published in the *Bengal Hurkaru*, gives an account of the Earthquake as experienced at Barrisaul :—

“ As I dare say that the shock of Earthquake which was felt here will have been likewise experienced at other stations with more or less severity, accounts of which will doubtless be communicated to you, I lose no time in telling you now, that a very severe shock was felt at a quarter to 10 p. m. at this station yesterday (Nov. 11th); although no accident occurred, considerable anxiety was caused by the length of time the Earthquake lasted. The heaving of the ground appeared to travel from E. to W. and continued with violence for about one minute. The river was greatly agitated, so much so, that the serangs of several pinnaces came on shore, unable to account for the extraordinary motion of the water.

“ I send down this account, because I imagine that an Earthquake of such severity having been felt at a place where its occurrence is so unusual must have extended elsewhere, and all information on the subject may prove interesting.

“ P.S.—The weather for the last few days has been remarkably warm for the season of the year; the variation in the Barometer has not been great. The Earthquake was accompanied by a rumbling noise, similar to that caused by heavy ordnance passing over the ground.”

At Gowahatti, Assam, (lat. $26^{\circ} 00'$, long. $90^{\circ} 40'$ E.) the shock was felt very slightly. Its period there was 10h. 00m. 56s. C. T. A correspondent of the *Friend of India* describes the motion as merely tremulous, but sufficient to attract the attention of four persons who were seated together at the time.

The shock was felt more severely at Chittagong, (lat. $22^{\circ} 22'$ N. long. $91^{\circ} 42'$ E.) probably because it had to traverse only alluvial lands, and had no mountainous tracts, as in Assam, to decrease its force. The period as given by two tolerably correct clocks, was 9h. 42m. 48s. C. T. The direction of the oscillation was from North to South, as determined by the motion of hanging lamps, &c.

The only place at any distance to the westward of Calcutta, whence any notice of the shock having been felt has reached me, was Monghyr (lat. $25^{\circ} 02'$ N. long. $86^{\circ} 29'$ E.) where a portion of the fort wall is said to have been brought down. No farther particulars have come under my observation, and I am unable to state either the time or direc-

tion of the shock at that place. At Baughulpore (lat. $25^{\circ} 13'$ N. long. $86^{\circ} 58'$ E.) I am informed by Mr. Piddington, that the shock was *not* felt.

It therefore appears that, *in so far as the facts collected extend*, the tract affected by the Earthquake of the 11th November 1842, was bounded on the North* by Darjeeling, on the East by Chittagong, on the West by Monghyr, and on the South by the position of the ship *Agincourt*, thus including about five degrees of longitude and five of latitude. That to the Eastward and Southward, and probably to the Northward also, the shock extended beyond the limit here assigned, can scarcely be doubted, from its intensity at the places specified as the bounding points of the tract in these directions, but there is no information available to prove that it did do so, and I am unwilling to venture upon conjecture.

It will have been observed, that at different places the shock appeared to travel in every different direction. Thus:—

At Calcutta, the direction was from E. N. E. to W. S. W.

At Pubna, „ from S. W. to N. E.

At Darjeeling „ from S to N.

At Chittagong „ from N. to S.

Now, it appears to me, that the only way in which these statements can be connected and rendered consistent, is to conceive the undulations of which the shock was composed, to have been propagated in a manner analogous to waves formed in water when a stone is thrown into it. Proceeding thus in all directions from a central point, the undulations would seem to observe to come from different directions, dependent on their position, relative to the centre whence the undulations had emanated. Of course waves propagated through the crust of the earth could retain but little of that perfect symmetry characteristic of waves in a homogenous fluid like water, since their forms would necessarily be modified by the variable nature of the strata through which they were being transmitted, and hence departures from strict theoretical accuracy of direction are to be anticipated. Assigning therefore a certain degree of *circularity* to the undulations of the Earthquake of the 11th Nov. and conceiving the centre of emanation to have been some little distance to the N. E. of Calcutta, it will be found that the observations on direction become to some

extent, consistent. At Calcutta the course would appear to be from N. E. to S. W.; at Pubna from S. E. to N. W. instead of from S. W., as stated before; at Darjeeling from South to North; and at Chittagong from the opposite direction. Some of the observations made, as at Barrisaul, do not correspond strictly with this view, but many sources of error exist when sensations are taken as the only guides, and by these it is possible the observations may have been affected. The idea of the circular propagation of the undulations is suggested only as a method of connecting the facts, and farther than it does so, I have no wish to claim any authority for it, the observations on which it is founded being too indefinite generally, to warrant this being done.

16. EARTHQUAKE AT BARODA, 1842.

I regret, that I have been unable to ascertain more regarding this Earthquake than that it occurred during the year 1842. I am therefore able only to record it, a circumstance I regret the more, as Baroda lies in the usual track of the Earthquakes of the Delta of the Indus, and it would have been interesting to ascertain, whether this shock had emanated from that focus, or was independent of it.

The Register is now completed, and I defer all comment upon the phenomena of the Earthquakes recorded in it, until the completion of the second part of this Memoir, when the phenomena of Indian Earthquakes generally, will be analysed.

Remarks on some of the disturbing causes in Barometric Observations. By Captain SHORTREDE, First Assistant, G. T. Survey.

If the barometric oscillations were perfectly uniform in different situations, it would obviously be a matter of indifference, theoretically, at what times of the day the observations might be made, provided they were simultaneous. But it is well known to those who have examined the subject, that the oscillations though tolerably uniform in low latitudes, are subject to particular variations, the causes of which are often not easily assigned. Whatever these causes may be, it is by no means likely that their effect will be transmitted in-

stantaneously through a long column of air, and hence it appears desirable, that the comparative observations should be made about the times of maximum and minimum of the atmospheric tide, when, the variations for a considerable time being almost insensible, it may be supposed that the causes will act with least disturbance. Another practical reason for selecting the times of maximum and minimum is, that perfect simultaneousness being seldom to be expected, it is evidently of advantage to select for observation those times at which the want of this condition will produce the least effect. About the middle of the tide, the barometer generally will vary as much in the course of five minutes, as it will in half an hour from the time of maximum or minimum.

Though these remarks seem true as far as they go, yet in particular cases, the atmospheric tides may be so affected by circumstances of locality, as to present anomalous results. I am unable at present to quote the documents containing the observations which gave occasion to what I am now about to state, but the results were so uniformly and repeatedly observed, that beyond settling the precise numerical amount of discrepancy, the possession of the original observations would add little to the evidence.

When I was in charge of the Bombay Trigonometrical Survey, I made many barometric observations in the Dekhan and along the Sea Coast. These were compared sometimes with those made at the Engineer Institution in Bombay; sometimes with the observations made by Colonel (then Major) Sykes at Puna; and sometimes with those of a barometer left in Puna for the purpose. All the observations on the Sea Coast compared with those made inland from the face of the Ghats, as at Puna agreed in one result, but I shall confine myself more particularly to the results of a special comparison for determining the height of Puna above the Sea.

One of my barometers had been repeatedly boiled, I believe upwards of twenty times, and it was so perfectly free from air, that when set up, the mercury used to adhere to the top of the tube six inches above the level at which it stood when shaken. The tube was full 32 inches long, and the mercury adhered to the top at a station upwards of 4000 feet above the Sea, where the proper height of the mercury was about 25.05m. This barometer was compared for several

days with one of Major Sykes' barometers, which I had filled and boiled, in which also the mercury used to adhere to the top of the tube. These two barometers used always to stand at the same height within a thousandth of an inch about the middle of the tide, but at the times of maximum and minimum, one of them used to range about two-thousands above and below the other. The difference to maximum and minimum being never less than '001, nor more than '003. We considered them to be the most perfectly comparable of any two barometers we had ever seen. Major Sykes' barometer remained on the spot where the comparisons had been made, while mine was carried to Bombay, and as the mercury still continued to adhere to the top of the tube, it plainly had not been deteriorated by the journey. Our observations were made simultaneously at 10 A. M. and 4 P. M. for several days successively, but on calculating them, I found that the 10 o'clock observations always gave the height of Puna about 100 feet more than was given by the 4 o'clock observations. I ascertained beyond doubt, that there had been no mistake of a tenth of an inch in registering the observed heights. The like discrepancy continued at several other stations along the Sea Coast. This discordance of result being unvaried, naturally set me to consider what might be its probable cause: and the only cause I have ever been able to discover at all likely to account for the fact, is in the effect of the Sea breeze, which at that season of the year begins to blow about 8 or 9 A. M. along the coast, while towards Puna it is not felt till about 2 P. M. After blowing over the low lands in the Konkan, it is intercepted about midway by the Seihadri Ghats, which presenting an almost perpendicular scarp of from 2000 to 3000 feet, cause the air to accumulate over the low land, thereby increasing its barometric pressure to an amount equivalent apparently to about a tenth of an inch of mercury, corresponding to a column of about 100 feet of air, somewhat similar to the *head of water* produced by an obstacle placed in its current.

I am aware that some persons may be disposed to treat this statement as of little authority, for want of the actual observations on which it is founded. The fact, however, is tangible, and may be submitted to proof or disproof by any one who chuses to make the necessary observations.

The purpose for which I have made the statement, is to call attention to the influence of locality as affecting the results of barometric measurements. Different places may have particular times, at which it is unsafe to trust to barometric observations for correct results.

As there seems reason to suppose, that the principal deranging causes in barometric measurements are connected with the sun and wind, I have often thought that probably the results by night observation may be found to be more consistent than those by day observations. Unless experience should shew a more favorable time, I should prefer observations made about the time of the morning minimum of the tide, because so far as I have observed, the air is then more generally calm than at any other time. This, however, is a matter of fact, on which every one may judge for himself according to his means of knowledge.

I have been led to the same conclusion by endeavouring to trace the causes of the atmospheric tides, which I am disposed to refer entirely to the direct or remote action of the sun. The following is offered as an attempt to trace this action, and though perhaps not altogether satisfactory, it may lead to something better.

When the sun rises over China, the atmosphere there getting heated, expands and begins to flow off towards the west, where the sun is exerting no heating power. As the solar heat increases, the western efflux of atmospheric air increases, and goes on increasing till the sun is past the meridian. When the sun rises over India, a similar western efflux is occasioned, but for some considerable time the influx from the eastward being greater than the efflux towards the west, the atmospheric pressure goes on increasing, till by and by, the direct heating effect over India causes a western efflux at first equal to, and then greater than, the influx from the eastward. The atmospheric pressure thenceforward decreases, and it goes on to decrease so long as the heating power of the sun causes the air to expand. At the surface of the earth, this effect is greatest about 2 or 3 P. M., but it is not till the heated atmosphere has had time to ascend and dislodge colder air that the total effect is greatest. The atmospheric pressure is then a minimum. When the sun is exerting its greatest power over India, it has ceased to heat the countries to the eastward: the air over these countries being colder, presses on that over the countries to the west-

ward, which is specifically lighter, until the air here being similarly cooled in like manner, proceeds to press on and displace the warmer air to the westward. When the influx balances the efflux, there is the evening maximum: after which the accumulated air gradually disperses itself till towards morning, when it is again pressed on before sunrise by the air heated in the east.

If this be a true account of the atmospheric tides, it is plain, that supposing the air to be calm, we may expect the disturbing causes will be least about the time of the morning minimum; and that at any time during the night if the air be calm, these are likely to be much less influential than during the day, for then they are entirely free from the direct action of the sun, which evidently has a great effect on barometric heights by the inequalities of temperatures which it occasions in different places. We know that even in the hottest weather, the temperature on the Sea Coast is tolerably uniform when compared with that of places inland, particularly when these inland places are on elevated plains. In such cases we cannot safely assume that the mean of the temperatures at the two stations will truly represent that of the intermediate column of air: or perhaps, to speak more properly, it cannot be assumed that the temperature and moisture at the upper station will approximate to those of a place on the same level immediately over the lower station; besides which, the barometric pressure at the inland station may be very different from that at the supposed station on the same level if, as is most likely, the state of the wind should be different in the two places. In short, any thing analogous to wind or current which would affect the correctness of water-levelling may be expected in a still greater degree to affect the correctness of barometric-levelling: and we may infer as a general conclusion that, besides the goodness of the instruments employed, the trustworthiness of barometric measurements will greatly depend on the care and skill with which the observers avoid the influence of disturbing causes.

11th April, 1842.

On Barometric Heights. By Captain R. SHORTEDE, First Assistant Grand Trigonometrical Survey.

If I remember rightly, your correspondent D has given a formula for computing Barometric heights, which to me appears to be neither so simple nor easy of recollection as that given by Professor Leslie, at the end of his Geometry; which is "As the sum of the mercurial columns is to their difference, so is the constant number 52,000 to the approximate height" in feet. This rule is easily remembered, and is not far from the truth; but a more correct result may be obtained by using 52,200 as the 3rd term. At the height of a mile the height thus found differs only nine feet in defect from that obtained by a logarithmic calculation, whereas by Leslie's rule the defect is twenty-nine feet. When the height does not exceed 4,000 feet, 52,200 gives within two feet of the logarithmic calculation. At elevations above a mile, the difference increases rapidly: it then becomes necessary, as Leslie recommends, to subdivide the interval into smaller portions.

The following Table shews the results of the several Rules.

Approximate Height by			
Barometers.	Logarithms.	52,200.	52,000.
30 and 29.5	438.0	438.7	437.0
... „ 29.0	883.4	884.7	881.3
... „ 28.5	1336.6	1338.0	1333.3
... „ 28.0	1798.0	1800.0	1793.1
... „ 27.5	2267.3	2269.1	2260.4
... „ 27.0	2745.4	2747.4	2736.8
... „ 26.5	3232.5	3233.6	3221.2
... „ 26.0	3728.9	3728.6	3714.3
... „ 25.5	4234.9	4232.4	4216.2
... „ 25.0	4750.9	4745.5	4727.3
... „ 24.0	5814.6	5800.0	5777.8
... „ 23.0	6923.6	6894.3	6867.9
... „ 22.0	8081.9	8030.8	8000.0
... „ 21.0	9294.1	9211.8	9176.5
... „ 20.0	10565.5	10440.0	10400.0

At 3700 feet by using 52,200 we get exactly the same result as by logarithms.

Leslie's rule is then in defect about 15 feet.

This rule may be thus expressed in words: "The sum of the barometric columns at the two stations is to their difference, as 52,200 to the approximate height in feet," and algebraically (B and b being the barometers at the 2 stations)

$$\left(\frac{B-b}{B+b}\right) 52200 = \text{Approximate height (A)}.$$

On the reduction of mean temperature by elevation, Professor Leslie has given the following formula as the result of his experiments on the cold produced by diminution of barometric pressure. If B and b denote the barometric pressure at the lower and upper stations; then will $\left(\frac{B}{b} - \frac{b}{B}\right) 25$ express on the Centigrade scale, the diminution of heat in ascent (B). This formula cannot be universally true, though it is known to give results agreeing very well with observation in moderate elevations. For if we suppose three stations A, B, C , in the same vertical line at which the barometer stands respectively at 30, 20, and 10 inches, it is obvious that the reduction of temperature between A and B together with that between B and C must be the same as the whole reduction from A to C . The formula gives $\left(\frac{30}{20} - \frac{20}{30}\right) 25 = 20.83$ as the diminution from A to B ; and $\left(\frac{20}{10} - \frac{10}{20}\right) 25 = 37.5$ as that from B to C : the sum of which is 58.33. But we have also $\left(\frac{30}{10} - \frac{10}{30}\right) 25 = 66.67$ as the reduction from A to C . This differs so much from the former result, that we may without any hesitation conclude that the formula cannot be strictly true. In order that the diminution from A to C may be equal to the sum of the diminutions from A to B and from B to C , it seems necessary to make it proportional to the ratio of the densities, or as the logarithm of $\frac{B}{b}$; that is, as the difference of the logarithms of the barometers at the two stations; and if we assume that Leslie's formula gives results not sensibly differing from the truth, at first, we shall have $115 \log. \frac{B}{b}$ to be marked (C) as the expression for the diminution of temperature on the Centigrade scale, or $207 \log. \frac{B}{b}$ to be marked (D) on Fahrenheit, which will give *consistent* results in all cases.* The diminution of temperature is thus proportional to the approximate height in barometric calculations, and if we calculate the approximate height corresponding to a reduction of 1 degree in temperature, we shall have 521.738 feet for 1° cent. and 289.86 feet for 1° Fahr., or in round numbers 522 for 1° cent. and 290 for 1° Fahr. at the temperature of freezing. The numbers 522 and 290 will require a correction for mean temperature, as in barometric measurements: This may be done very simply. The expansion on a column of air of 522 feet for 1° cent. is just about 2 feet, and on 290 feet for 1° Fahr. the expansion is 6 feet very nearly. Hence the corrected numbers may be found

* If necessary the co-efficient may be corrected so as to agree with observation.

as follows: To 522 add twice the number expressing the mean temperature in degrees cent., and we have the correct height corresponding to a difference of 1° cent. and on Fahr. multiply the mean temperature above 32 by 0.6 and add it to 290, the sum is the correct height giving a difference of 1° Fahr.

The following Table may be convenient for reference.

Mean Temp. Cent.	Height for 1°.	Mean Temp. Fahr.	Height for 1°.
0	522	30	289
5	532	32	290
10	542	40	295
15	552	50	301
20	562	60	307
25	572	70	313
30	582	80	319

I may perhaps have occasion to refer again to this subject.

There is a formula for finding the approximate height in barometric operations of the same general form as that of Leslie, for diminution of temperature. The formula is $\left(\frac{B-b}{b}\right) 13050 = \text{Approx. Ht.}^* (E)$ The co-efficient in this formula is half the height of the equiponderant column. The co-efficient of formula (A) before given is 52,200, being *double* the height of the equiponderant column, or just 4 times the co-efficient of formula (E). Now as in Leslie's formula the co-efficient is 25 cent. or just $\frac{1}{4}$ of the interval from freezing to boiling, we may therefore transform it into another of the form (A) and it becomes $\left(\frac{B-b}{B+b}\right) 100 = \text{diminution in degrees cent. or } \left(\frac{B-b}{B+b}\right) 180 = \text{diminution in deg. Fahr.}$ which may be thus expressed: "The sum of the barometers at the two stations is to their differences, as the No. of degrees in the interval from boiling to freezing is to the diminution of mean temperature by ascent." This rule will give results not sensibly differing from those of the logarithmic formula (C and D) at intervals of 4000 feet, or even at a mile.

* The formula, $\left(\frac{B-b}{b}\right) 13,000$ and $\left(\frac{B-b}{B+b}\right) 52,200$, for the approximate height, are only close approximations to the truth, and are not absolutely identical: the former errs in excess, and the latter a little in defect. If they were absolutely identical, we should have $\frac{B-b}{b} - \frac{b}{B} = 4 \frac{B-b}{B+b}$, or $\frac{B-b}{B+b} = \frac{B^2 - b^2 (B+b) (B-b)}{4Bb}$, from which by transposition and division we get $4Bb = B^2 + 2Bb + b^2$ hence $2Bb = B^2 + b^2$, which however do not differ much from the truth when B and b are nearly equal.

*Catalogue of Nepalese Birds presented to the Asiatic Society, duly named and classified by the Donor, Mr. HODGSON, [and revised by the Society's Curator].**

1. [*Spizaetus* (Vieillot, as recognised by Messrs. Jardine and Selby, *Ill. Orn. pl. LXVI*) *grandis* :†] *Nisaetus grandis*, Hodgson, [*J. A. S. V*, 230 ;] (aberrant species :) [*Nisaetus niveus* ? Jerdon, 'Madras Journal,' No. XXIV, 69,‡ (as identified from a specimen presented to the Society by that gentleman ;) but not *Falco niveus*, Temminck, which is *Nisaetus Nipalensis*, Hodgson, *J. A. S. V*, 229, and apparently also the *F. caligatus*, Raffles, *Lin. Trans. XIII*, 278, wherein the statement that it measures "more than three feet across the wings" would seem to be a misprint for five feet : the latter species, *i. e. niveus* (aut potius *caligatus* ?) is not uncommon in Lower Bengal, adults having the under-parts very handsomely streaked with deep brown or brownish-black, of which but slight or sometimes no traces occur in the young ; one adult female which I have obtained, that was paired with a mate of the ordinary colour, being wholly dusky-black, with an ashy tinge on the upper-parts ; its brilliant golden irides contrasting finely with the blackish hue of the plumage.

The *Sp. grandis* varies much in colouring according to age, and somewhat even at the same age ; wherefore, as Mr. Hodgson's des-

* *Vide* XI, 778.—It was the wish of Mr. Hodgson that this Catalogue should have been published immediately, but this could only have been done in a very crude and imperfect manner, and the delay is more than compensated by the suppression of a host of unpublished synonyms, which would otherwise have required to be subsequently reduced. I have also had to find up the various scattered descriptions by Mr. Hodgson, and to collate the synonymy of many of the species, besides drawing up descriptions of several new species, — altogether no inconsiderable labour. Moreover, the delay has enabled Mr. Hodgson to improve the nomenclature considerably, both as regards the institution of some necessary new genera, and the specific appellations of certain of the new species.—E. B.

† Since writing the above, I have strongly inclined to the opinion that this is the *Aquila Bonelli*, of which I have no good description to refer to. *A. Bonelli* is included in Mr. Vigue's list of birds procured in Kashmir and little Tibet, *P. Z. S.* 1841, p. 6, the present species, besides being quite crestless, has the cere of an *Aquila*, and not of a *Spizaetus* ; but its irides are bright yellow, as in the latter group, and the general form also inclines more to the latter.

‡ *Vide* also Elliot, in No. XXV, p. 234, of the same publication

cription of this fine species was drawn up from a single specimen, being the only one that he had then obtained, it is quite necessary to describe it anew, in its different phases.

Length of an adult male twenty-seven inches, by sixty inches in spread of wing (Hodgson); of a female, eighteen inches (Elliot). The closed wing, in a series of seven specimens before me, varies from seventeen inches and a half to twenty inches and a quarter, and the tail from eleven inches to twelve inches and a half; but the greater number approach to the respective former of these dimensions: from point of upper mandible to gape measures about two inches, more or less; tarse about three inches and a half: the talons large and formidable.

This bird approaches somewhat in form to the true *Aquila*, and is distinguished from its congeners by the absence of all trace of the usual occipital crest. Adults deep aquiline-brown above, the somewhat lanceolated feathers about the nape laterally margined with whitish, or, in some, with pale brown: tail more or less greyish, and crossed with about seven narrow dark bars, in addition to the subterminal one which varies much in breadth: under-parts pure white, with a narrow dark brown mesial streak to each feather; the tibial plumes chiefly deep brown, freckled with whitish; and the under-coverts of the wings dark brown. Bill plumbeous, its tip and the talons black; cere and toes pale waxy-yellow; irides bright yellow. The mesial stripes on the feathers of the under-parts incline to be broader in the female, and are more developed on the belly, where in some the dark brown colour predominates, spreading in bars over the feathers; under tail-coverts also more or less distinctly banded: some specimens shew the white bases of the feathers very conspicuously about the nape: the inner webs of the tail-feathers are prettily mottled, more especially in adults, as also those of the primaries anterior to their emargination; underneath, the tail is albescent, and its bars are more or less obliterated, with the exception of the terminal one when broad. The young have the lower parts deeply stained with ferruginous (more or less so), and the mesial stripes to the feathers narrow and inconspicuous, scarcely occupying more than their shafts; tibial plumes the same, though in some there are traces of the marking on those of the adult; and the fore-part of the under-surface of the

wing is also similar, or nearly so, having at most a dark patch on the under-coverts of the primaries: above, the general cast of colour is merely paler than in the adult, the deeper hue of the latter being confined to near the tip of each feather and along the shaft, whereas in adults it spreads nearly to the edge: and the tail appears more closely barred, with blackish or deep brown upon a pale ground-hue.

The Crestless Eagle-hawk (as this species may be appropriately termed) appears to be generally, though sparingly, diffused over the wooded districts of the mountainous parts of India, while on the Himalaya it would seem to be not unfrequent. It hunts more on the wing than its congeners, in conformity with its structural approximation to the true Eagles. Mr. Jerdon observes, that it is certainly a rare bird in Southern India; and Mr. Elliot, that it "is the noblest of the Indian Eagles, being seldom seen, and then generally at a great height in the air, in wild and savage places. It preys on the Hare — I once saw a pair of them hunting in company, which nearly surprised a Peacock, pouncing, on him on the ground." This gentleman remarked its distinctness from the *Falco niveus* of Temminck, to which Mr. Jerdon dubiously referred it. The latter does not hitherto appear to have been met with in Southern India, though tolerably common in Bengal, and also in Nepål.

2. [*Hæmatornis undulatus*, Vigors, *P. Z. S.* 1831, p. 170; Gould's *Century*, pl. I.] *Circæetus Nipalensis*, Hodgson [*As. Res.* XVIII, pt. II, p. 17 (published 1833)], this bird being clearly a *Circæetus*. [*Falco bido* (?), Horsfield, *Lin. Trans.* XIII, 137 (1821!); *Buteo bacha* (?), apud Franklin, *P. Z. S.* 1831, p. 114; and *Hæmatornis bacha* (?), Sykes, *Ibid.* 1832, p. 79. When this species was characterized by Mr. Vigors, "the three species of the group (*Hæmatornis*, Vigors,) were exhibited; their general similarity in colour and markings pointed out; and their specific differences explained. These consist chiefly in size; the *H. holospilus*" (*P. Z. S.* 1831, p. 96, from Manilla,) "being one third smaller than" (the African) "*H. bacha*; while *H. undulatus* considerably exceeds the latter. The first is spotted all over the body, the second only on the abdomen; while the third is marked by spots on the wing-coverts, and by *ocelli* bearing an undulated appearance on the abdomen, the breast also being crossed by

undulating *fasciæ*." A common species in Bengal, as in India generally.]

3. *Pandion* [*haliaëtus* : diffused in suitable situations throughout India.

4. *Ichthyætus Horsfieldi* : *Falco ichthyætus*, Horsfield :] *Haliaëtus plumbeus*, Hodgson [mentioned in *J. A. S.* VI, 367. Not uncommon in Bengal. The spotted first plumage of this bird much resembles the corresponding garb of the common Indian Kite (*Milvus cheela*) ; and in its next dress the basal portion of the tail is brown, more or less barred above.

A second species presenting the same characters is the *I. nanus*, Nobis, *J. A. S.* XI, 202. It is distinguished by its very inferior size, the closed wing measuring but fourteen inches in length. The only specimen I have seen was received from Singapore, being clad in worn nestling plumage, whereof the terminal pale spots had almost disappeared ; and there is a considerable admixture of white on the new feathers growing on the under-parts, forming central streaks on the plumage of the abdomen. The fully adult garb would probably much resemble that of the preceding species. It appears to me that the term *Ichthyæta* should be restricted to these birds with smooth talons, like those of an Osprey ; and that the *Ichthyætus leucogaster* of Gould's magnificent 'Birds of Australia' (the *Falco leucogaster*, Latham), which scarcely, if at all, differs from the Indian *Haliaëtus blagrus* except in its much superior size, should be retained in *Haliaëtus*, wherein Mr. Gould had already classed the young as *H. sphenurus* *P. Z. S.* 1837, p. 138), as I formerly arranged a specimen of *H. blagrus* (in second plumage), by the appellation *Ichthyætus cultrunguis*, *J. A. S.* XI, 110.

The truth is, that after *Haliaëtus* has been dismembered by the detachment of *Ichthyætus*, Lafresnoy, there still remain three marked natural divisions of the genus, which are as follow :—

A. The typical form, as exemplified by the European *albicilla* and North American *leucocephalus*, and to which the Indian *H. Macei* and some others likewise appertain. This last mentioned bird is the *H. albipes*, Hodgson, *J. A. S.* V, 228 ; and the young in first plumage is the *H. lineatus*, Gray, and in second plumage the *H. unicolor*, Gray, of Hardwicke's Illustrations.

B. The wedge-tailed group, exemplified by *H. leucogaster* and *H. blagrus*; referred by Gould and since by myself to *Icthyætus*, but, as I now think, erroneously.

C. The diminutive group with comparatively feeble talons, exemplified by *H. Pondicerianus* (the *Brahminee Cheele* or *Sunkur Cheele* of India), and the Australian *H. leucosternus*, Gould, *P. Z. S.* 1837, p. 138. To this division Mr. Gould has since applied the term *Haliastur*.

Ornithologists in this country should seek to obtain the *Icthyætus nanus*, which most probably will be found to occur.

5. *Spizaëtus pulcher*;] *Nisaëtus pulcher*, Hodgson, [mentioned in *J. A. S.* VI, 361, and now regarded by him as typical of that group. It devolves on me to furnish a description of this showy species, which may readily be distinguished from its congeners by its longer and handsomely banded tail, whereon are five dark bars, as broad as or broader than the interspaces of pale ground-tint, whereas in the other species the dark caudal bars are much narrower than the intervening spaces. The occipital crest is fully developed, measuring four inches in length. Plumage of the upper-parts deep aquiline-brown, very dark on the interscapularies, and verging upon black on the crown and occipital crest, which is slightly tipped with whitish; nuchal feathers conspicuously margined with tawny-brown, and their pale basal colour more or less shewing about the nape: under-parts whitish, more or less deeply tinged with fulvous, and marked on the breast with longitudinal broad mesial dark streaks to the feathers; the chin is blackish, continued as a median line to the breast, and two similar lateral streaks, at first very broad, proceed from the corners of the gape; belly and flanks more or less distinctly banded with brown and white, the latter narrower, and the brown darker towards the white, — the belly especially having a confusedly mottled appearance, and the under tail-coverts are similar; the lengthened tibial plumes are more distinctly banded, and the tarsal less so, becoming whitish towards the toes: tail as described, having five broad dark bands, with interspaces of a mottled light brown, becoming greyish with age; its larger upper coverts also banded brown and white, the latter narrower: primaries and secondaries dark brown, banded with blackish; their under surface and that of the tail albescent, with the bars anterior to the emargination of the primaries, and those of the outermost tail-feathers, semi-obsolete.

Length twenty-nine to above thirty-two inches, of which the tail measures thirteen to fourteen inches and a half; wing eighteen to nineteen inches; tarse four inches and a half, and in one specimen before me very densely feathered, in another much less densely. Bill two inches from point to gape, in a straight line: the talons large and powerful. Both these specimens are evidently adults, and probably male and female.

Three Indian species of this group have now been noticed; viz. *grandis*, *niveus* (aut *caligatus* ?), and *pulcher*, and there remain the following: *Sp. cristatellus* (Tem.), Jardine and Selby, *Ill. Orn.* pl. LXVI; Elliot, in *Madras Jl.*, No. XXV, 234; — *Sp. Kienerii*; *Astur Kienerii*, *Magasin de Zoologie*, Guérin, 1837, pl. 35; *Sp. albugularis*, Tickell (Nobis), *J. A. S.* XI, 456, — *pallidus*, mentioned only by Mr. Hodgson in *J. A. S.* VI, 361, which I do not know; — and *rufitinctus*, McClelland and Horsfield, *P. Z. S.* 1839, p. 153, which would scarcely seem to belong strictly to this genus.*]

6. *Limnaëtus* [*unicolor*, Vigors; *Falco limnaëtus*, Horsfield; *F. unicolor*, Temminck; *Morphnus hastatus* (?), Lesson, *Zoologie du*

* Since the above was written, the Society has received two fine specimens of a member of this genus, which, from Mr. Elliot's description, I am disposed to refer to *Sp. cristatellus*. Length about twenty-six inches, of wing from bend sixteen inches, and tail twelve inches; bill, from point to gape, an inch and three-quarters; and tarse four inches and a half anteriorly: occipital crest four inches. Colour of the upper-parts light fulvescent-brown towards the edges of the feathers, their central portion dark aquiline brown, which latter is confined to a mesial streak on the feathers of the nape; prolonged occipital crest dull black: under-parts white at base, and for the greater portion of each feather, their terminal part having a mesial dusky streak, edged with light brown; a dusky streak more or less developed from each corner of the lower mandible, and a central one on the throat well developed in one specimen, indistinctly so on the other; a brownish bar across the abdomen more or less distinct; and posterior to this the abdominal feathers and lower tail-coverts are banded with light fulvous-brown, and broadly tipped with the same, the tibial and short tarsal plumes being similarly coloured: volar feathers of the wings dusky externally, their inner webs brown with dusky bars, and the pale portion passing into white internally, anterior to the emargination of the primaries; underneath the volar plumes are white anterior to their emargination, and barred with dusky beyond it; the fore-part of the under surface of the wing being also white, mottled with dusky-brown, and the axillaries and sides marked with rufescent-brown: tail also brown above, with five dusky bands on the older specimen, the basal one indistinct, and the last or subterminal band broadest; in the other marked with six dark bands, and the rudiment of a seventh at base; underneath albescent, the dark bands partially obsolete. This species is not improbably Mr. Hodgson's *pallidus*; and can only doubtfully, I think, be referred to that figured by Messrs. Jardine and Selby.

Voyage de M. Bélanger, p. 217. A second species of this division exists in the *L. (olim Buteo) punctatus*, Jerdon, *Supplement.*]

7. *Falco* [*shaheen*, Jerdon, *Madr. Jl.* No. XXIV, 81.]

8. *Pernis* [*Ellioti*, apud Jerdon, to whom the specimens were transmitted for examination. I must confess, however, that I am by no means satisfied of the distinctions pointed out between this and the *P. cristata*, Cuvier, vel *Falco ptilorhynchus*, Tem.; specimens of both being before me so labelled by Mr. Jerdon; and one of the latter minutely agrees with the description of *P. maculosa*, Lesson, in the *Zoologie du Voyage de M. Bélanger*, except in possessing a distinct crest. Now I am unaware that any good distinction has hitherto been remarked between the *P. cristata* and *P. apivora*, further than that the European bird is never crested, both being alike variable in plumage; and I see that the latter is enumerated among Dr. Royle's birds procured at Saharanpore. In reference to the value of the character derivable from the presence of a crest, it may be remarked that Mr. Hodgson describes a variety of *Spizaetus niveus* (his *Nisaetus Nipalensis*, *J. A. S. V*, 229), having "a drooping Egret-like crest of two long, narrow, composed plumes"; whereas in general, and in all cases observed by me, this species has merely a very slight indication of such a crest at any age. Nevertheless, the prevalence of the crest in Indian Perns, and its invariable absence in those of Europe, are sufficiently remarkable; and probably indicate an aboriginal distinctness of species, though perhaps sufficiently allied to breed and merge together where they inhabit the same localities. M. Lesson also speaks of a *P. torquata*, *P. ruficollis*, and a *P. albogularis*, referring to his *Traité d'Ornithologie*; but if reposing only on differences of colour, I should be very slow to accept such diversities as specific].

9. *Milvinæ*. Genus [*Haliastur*, Gould.] *Haliaetus*!! *Pondicerianus*, Auct. type. [*Milvus Pondicerianus*, apud Jerdon.] Leads from Eagles to Buzzards. [It is curious to remark the difference of opinion expressed with regard to the systematic position of this well known species. Thus Mr. Hodgson writes:—"Those who have classed the *Brahminee Cheel* of India with the fishing Eagles, may be safely said to know as little of the structure, as of the habits, of that paltry *Milvine* bird," &c. (*J. A. S. VI*, 368.) And Mr. Jerdon "nearly agrees" with him in opinion; even ranging it, as we have seen, in

Milvus (*Madr. Jl.* No. XXIV, 72.) Dr. Jameson, on the other hand, avers that "no person who has ever studied this bird in its native haunts on the Hoogly or the Ganges, where it occurs in vast numbers, in company with other *Haliaëti* (!), would for a moment doubt where its proper position ought to be in the Ornithological system." (*Calc. Journ. Nat. Hist.* No. III, 318.) Mr. Gould, again, on referring a new Australian species to *Haliaëtus* (*P. Z. S.* 1837, p. 138), remarks that it is "nearly allied to *Hal. Pondicerianus*," thus doubly acknowledging the current arrangement of the latter, though he has since formed a particular section for these two species. For my own part, I have long regarded the true *Milvi* as being closely related by affinity to the *Haliaëti* or *Ernes*, and therefore find no difficulty in agreeing with Messrs. Hodgson and Jerdon as regards the proximity of the *Brahminee Cheel* to the Kites, while I still prefer to retain it as a subgenus of *Haliaëtus*, of which group I have already indicated three marked natural divisions, the present bird being characteristic of one of them.

10. *Astur* (?) *Dussumieri*: at least this species appears closely allied to two Australian Hawks (*approximans* and *cruentus*) recently referred to this genus by Mr. Gould, having the toes very much shorter than in restricted *Accipiter**; but it would be better perhaps to institute a separate division for this intermediate form: *Accipiter Dukhunensis*, Sykes; and] *A. scutarius*, Hodgson, [*Bengal Sporting Magazine*, for 1836, p. 180; the young: noticed also in *As. Res.* XIX, note to p. 175, together with an *A. affinis* which, from the context, I much suspect is merely the adult.† N. B. Mr. Jerdon agrees with me in referring the specimens marked *scutarius* by Mr. Hodgson to the young *A. Dussumieri*.]

11. *Buteo canescens*, Hodgson, ('*Bengal Sporting Magazine*' for 1836, p. 180.) As few naturalists, but especially foreign naturalists, have the opportunity of consulting the work referred to, I deem it proper to quote the description, and shall offer some further remarks on the species.

It is a perfectly typical Buzzard, nearly allied to the European *B.*

* Vide *P. Z. S.* 1837, p. 98.

† The *Noctua Tarayensis* there mentioned is *Athene brama*, or *N. Indica*, Franklin; and the *N. tubiger* identical with *N. Buxodiei*, Burton, *P. Z. S.* 1835, p. 152.

vulgaris. "Mature female twenty-three to twenty-four inches long, by fifty-four to fifty-six inches in extent of wings, and three lbs. and three-quarters in weight:" wing from bend sixteen inches and three-quarters to eighteen inches and a quarter, and tail ten to eleven inches: point of upper mandible to gape one inch and seven-eighths; and tarse three inches and a quarter, being plumed for the upper inch and a half. The male is considerably smaller, with wings fourteen and three-quarters to sixteen inches, and tail nine inches and a half to ten and a half.

The following is Mr. Hodgson's description of the plumage: "Female: — head, neck, and body below, white; dashed here and there with beauteous buff, and streaked narrowly and lengthwise on the cap and thighs with brown: tail, whitey-brown, with four to six narrow bars towards the end: back and wing-coverts, medial brown, the larger picked out with rufous: quills immaculate externally, and the great ones darker or black-brown; all the quills blanchied internally except near their tips; but the primaries, immaculate; the rest, and especially the secondaries, shewing six brown bars across the inner vanes of the plumes: legs and cere dirty-yellow; bill blue, its hook and the talons black: iris hoary.

"Male smaller and less blanchied. Young greatly more coloured than the mature female; above and the thighs saturate-brown, edged with rufous; below sordidly rufescent, or luteous, with large longitudinal dashes of brownish-red, changing to herring-bones on the thighs: tail brown, with deeper cross-bands prevailing throughout, and amounting to ten in number: iris brown; legs and cere, greenish."

From a series of specimens before me, however, it is quite clear that the brightly rufous-edged specimens are adults, while the young have but little trace of this colour, which is more or less confined to the scapularies and wing-coverts, and is besides comparatively very faint and pale; and that such *are* the young is demonstrated, not only by the less acuminate form of the nuchal plumes, but from the fact that one of them was killed while beginning to moult, and shews a few of the new bright rufous-edged feathers among its scapularies, which contrast strongly with the dull hair-brown colour of the rest of the upper-parts. A particularly fine female, received from Mr. Hodgson, may be described as having the dorsal plumage and smaller wing-feathers

slightly empurpled dusky, laterally somewhat broadly margined with bright rufous, which fades considerably as the feathers become old; head dull rufescent-brown, margined paler, with a vague whitish streak over the eyes, enlarging beyond them; feathers of the nape pointed and slender, white at base, with dusky terminal thirds edged laterally with rufous; those of the sides of the neck rufescent with dusky shafts, and edged laterally with whitish or hoary; throat white, with narrow dusky shafts, and the rest of the under-parts fulvous-white, with mottled dusky-and-rufous blotches on the feathers, inclining to form a sort of gorget on the breast, and always presenting a broad dark abdominal band, more or less developed (as in *B. lagopus*): lengthened tibial plumes dusky, tipped with dark rufous, or in some specimens of the latter hue, with merely dusky shafts: tertiaries and greater wing-coverts hair-brown, the former more or less distinctly barred on their inner webs, upon a whitish ground in some; the tips of the primaries and secondaries empurpled dusky, and the outer webs of the exterior primaries greyish to near the end; underneath, the wings display a very large white patch, constituted chiefly by the inner vanes of the primaries as far as their emargination, and the fore-part of the wing is dusky, broadly edged with rufous, of which colour are also the axillaries: tail rather faint rufous, with a nearly obsolete subterminal dark bar, its basal portion, and the exterior webs of all the outer feathers, dashed with cinereous. Other specimens have merely narrow mesial streaks of rufous, with dusky shafts, to most of the feathers of the under-parts, and the abdominal band paler and chiefly rufous; tail with little or no ashy tinge, indicating that such are less advanced in age. The immature plumage is of a generally more dingy cast, with no rufous below, even on the tibial plumes; the dorsal feathers are scarcely, when at all, margined with faint rufous; and the primaries and tail are minutely mottled and numerously banded: but these also vary in the amount of developement of their markings, both as regards the extent and depth of colouring.

According to Mr. Hodgson — "These birds are very common in the central and northern hilly regions of Nepâl; but I never," he remarks, "procured one from below. The species appears to be an oriental analogue of *B. vulgaris*. It adheres to the woods when the crops are up; but, after harvest, comes into the open country, and is

perpetually seen in the fields perched on a clod, and looking out for Snakes, which constitute its chief food. It also preys on Rats and Mice, and on Quails, Snipes, and Partridges; but is reduced to take the *birds* on the ground. I have seen it, however, make a splendid stoop at a Quail, which, after being flushed, chanced to alight on a bare spot, so as to be visible to the bird as he followed it with his eye on the wing and marked it settle. Teal and even Ducks are frequently slain by our bird in the same way. If he can perceive them take wing, even at half a mile's distance, he is up with them in an instant, and is sure to capture them, unless they are under cover in a moment after they touch the earth. I have carefully compared specimens of *vulgaris* and *canescens*, and cannot help thinking that the species are distinct; the breadth of the head and of the bill near it being so much more striking in the latter than in the former. Authors suppose that *Buteo vulgaris* is never found east of the Cape. Our bird is its representative."

Its representative no doubt on the Himalaya, but in Southern India there are two true Buzzards, the *B. longipes* and *B. rufiventer*, Jerdon, and in the Tenasserim provinces another, *B. pygmæus*, Nobis.]

12. *Elanus melanopterus*: [*Petite Buse Criarde* of Sonnerat, upon which are founded *Falco vociferus*, Latham, and *F. clamosus*, Shaw.]

13. *Accipiter [nisosimilis]*, Tickell, *J. A. S.* II, 571: *A. nisus* vel *fringillarius* of Jerdon and others. It differs from the European species in its larger size, and in having constantly a long superciliary white line; the markings of the under-parts are also somewhat different.

14. *Milvus [cheela]*; *Falco cheela*, Gmelin: *M. govinda*, Sykes; *M. ætoliæ*, Lesson. *N. B.* I thought at first that the specimens sent of this bird presented certain differences from the common Indian Kite, but subsequent comparison of them with numerous examples of the latter has convinced me of their identity.]

15. *Falco peregrinus*: [*F. calidus*, Latham.]

16. *Falco [juggur]*, Hardwicke and Gray; *F. luggur*, Jerdon] (*Logger, Jhagger, Indicè, Maset, fœm.*) •

17. *Falco tinnunculus*.

18. *Buteoninæ*. Genus *Butastur*, Hodgson. *Buteo teesa*, Auct., type. [*Circus teesa*, Franklin; *Astur Hyder*, Sykes.] It differs from the true

Buzzards in its less corpulent form, and general adaptation for more active habits: the tarsi are longer and more prominently scutellated in front, the toes also being scutellated above nearly to their base, and the talons are comparatively powerful. The markings also are somewhat peculiar, and recall to mind those of various South American *Raptores*; but still manifest a relationship to the true Buzzards, which is further conspicuously shewn by the rufous tail.

19. *Falconinae*. Genus *Hyptiopus* (Hodgson, olim *Baza*, H. [*lophotes*; *Falco lophotes*, Temminck: *Lophotes Indicus*, Lesson; *Buteo cristatus*, Vieillot; *Colvy Falcon* of Latham; *Falco Lathamii*, J. E. Gray, and since *Lepidogenys Lathamii*, G. R. Gray; *Baza syama*, Hodgson, *J. A. S. V.*, 777, which latter generic name has precedence of *Lepidogenys*, while *Lophotes* is pre-occupied in Ichthyology. Moreover, I do not consider this form to appertain to the Falcon group, but decidedly to that of the Perns and Elans.] Type.

20. *Falco chicquera*.

21. *Ierax* [*Bengalensis*: *Little Black and Orange-coloured Hawk* of Edwards, erroneously regarded as the female of *I. caerulescens* by various authors. Vide p. 180,* ante.

22. *Ketupa Leschenaultii*, Lesson: *Strix Hardwickii*, Gray: *culturigris nigripes*, Hodgson, *J. A. S. V.* 364, and mentioned in VI, 363. Identical with specimens from Southern India and the Tenasserim provinces.]

23. *Mesomorpha* (Hodgson, olim *Urrua*, H.) [*Bengalensis*; *Otus Bengalensis*, Franklin, Gould: *Bubo ? caveareus*, Hodgson, *As. Res.* XIX, 169, and since *Urrua cavearea*, H., *J. A. S. VI*, 372; altered to *Mesomorpha*, Ibid. X, 28, where various other prior appellations are similarly changed and classicized; *Urrua Bengalensis*, Jerdon.] Type.

24. *Meseidus* (Hodgson, olim *Bulaca*, H.) *Newarensis* [*Ulula ? Newarensis*, Hodgson, *As. Res.* XIX, 168; *Bulaca*—*Id.* *J. A. S. VI*, 372; *B. monticola*, Jerdon, *Supplement.*] Type.

25. *Strix flammea*: [*Str. Javanica*, apud Jerdon.]

26. Genus *Ninox*, Hodgson: type. *N.* [*scutulatus*; *Strix scutulata*, Raffles, *Lin. Trans.* XIII, pt. II, 280: *Str. hirsuta*, Tem.; *Str. lugubris*, Tickell, *J. A. S. II*, 572; *Ninox Nipalensis*, Hodgson, *Madr. Jl.* No. XIV, 23, with figure; *J. A. S. VI*, 364, where the singular paral-

leism of proportions manifested by this species and the Hawk *Hyptiopus lophotes* is noticed in minute detail.

27. *Athene cuculoides*;] *Noctua cuculoides*, Vigors and Gould. [This bird* is found in Southern India and in the Tenasserim provinces].

28. *Scops lettia*, Hodgson [*As. Res.* XIX, 176: *Scops Lempiji* (?), Horsfield, vel *Sc. Javanicus*, Lesson, to which an Assamese specimen is referred by Dr. Horsfield. I incline to suspect that the *Sc. Sunia*, Hodgson, *Ibid.*, will prove to be merely the young, as the "Red Owl" of Wilson's 'American Ornithology' is of his "Mottled Owl", (*Sc. Asio*).

29. *Athene radiatus*; *Strix radiata*, Tickell, *J. A. S.* II, 572; *Athene erythropterus*, Gould, *P. Z. S.*, 1837, p. 136;] *Noctua perlineata*, Hodgson [mentioned in *J. A. S.* VI, 369].

30. *Lophophorus Impeyanus*.

31. *Tragopan satyrus*.

32. *Euplocomus leucomelas*.

33. [*Ithaginis* (Wagler;) *Plectrophorus*, J. E. Gray; *Ptilopachus*, Swanson;] *eruentata*.

34. *Gallophasis* (Hodgson, type,) *pucrasia*. [*Phasianus pucrasia*, Vigors and Gould. This bird certainly does not rank well in any of the divisions hitherto established among the Pheasants. Its distinctive traits consisting in the absence of any nude crimson space around the eyes, in the similarity of the sexes, the peculiar character of the plumage, and the short straight tail; but it approximates the restricted *Phasianini* more than it does any other group, and it is remarkable that the only Indian species of true Pheasant (*Ph. Wallichii* vel *Stacei*) differs from the rest in being crested, though much less heavily than the present bird, which latter is known to sportsmen by the names *Plass*, *Pucrass*, and *Koklass*.

* The Society has just been presented with a specimen from Chusan.

*Proceedings of the Asiatic Society.**(Wednesday Evening, 12th April, 1843.)**Present.*

Sir J. P. Grant, Knight,
 Sir W. H. Seton, Knight,
 Lieutenant Colonel, W. N. Forbes, C. B.
 H. Torrens, Esq.
 R. Houstoun, Esq.
 Captain A. Broome,
 N. B. E. Baillie.
 S. G. T. Heatly, Esq., and others.

The Honorable W. W. BIRD, President, in the chair.

The President opened the business of the evening by expressing his thanks to the Society for electing him as its President. He observed, that he was one of the oldest, if not the oldest, member in India; that he felt both pride and gratification in the honor conferred upon him, and would use his best exertions to uphold the credit of the Society, which had attained so much celebrity in the estimation of the scientific world. The President observed, that although he could not promise much, individually, to the Society in scientific matters, yet from his position in Society, he was satisfied that he could influence largely valuable contributions. That he had been in some measure successful in this hope, in as much as he had prevailed upon Mr. H. Torrens, the late Honorary Secretary, to continue his labors as such for the Society, aided by a stipendiary Sub-Secretary. This point was not of immaterial importance when the difficulty of procuring men of scientific attainments, and with the other qualifications requisite to fit them for the multifarious duties of Secretary to the Society was considered; and this was feelingly illustrated by the President in the case of their late illustrious Secretary, Mr. J. Prinsep, who sacrificed his life in the ardour of his scientific researches to benefit the Society. The President concluded by referring to a memorandum which had been prepared at his request, for the future conduct of the business of the Society by the Honorary Secretary, and which was read as follows:—

At a Meeting of the Committee of Papers held at Government House, on the 1st April, 1843 :—

Present

The Honorable the President.

Sir H. W. Seton, Knight,

Lieutenant Colonel W. N. Forbes, C. B.

Lieutenant A. Broome.

H. Torrens, Esq. Officiating as Secretary to the Committee.

Read the following Memorandum.

Resolved,---That its substance be generally approved, and that it be submitted to the Society at the ordinary Annual Meeting for the appointment of Officers of the Society, to be held on the 12th April.

H. TORRENS,

Officiating as Secy. to the Committee.

The Honorable the President has expressed a wish, that I should lay before him a Memorandum of the course expedient to be taken with reference to the conduct
in the

The Honorable the President desires, that the office of Secretary should continue to be held as an honorary appointment. It is the wish of the Society generally.

But I have explained to him the impossibility of procuring the entire services of any honorary holder of the office, and he has acquiesced in the expediency of engaging a Sub-Secretary to conduct ordinary correspondence with current business, and to assist, under the Secretary, in the editing of the Journal lately my property, which the Society desire to take over, and make their own.

I have now to suggest the mode in which the Sub-Secretary may be remunerated, without inducing extra charge to any serious extent upon the Society. And here let me observe, that I intend submitting to the Society, with the sanction of the Honorable the President, the nomination of Mr. Henry Piddington, our Geological Curator, to the duty. His general acquaintance with the principles of science; his long experience of this country, its usages, and its people; his literary qualifications; his habits of business; and last not least, his well-known zeal for science, his mental powers and his energetic use of them; render him more eligible for the very miscellaneous and peculiar duties which he could be called upon to perform as Sub-Secretary than any person with whom I am acquainted in Calcutta or in India. I have had good reason to know how well he could perform those duties by my experience of the manner in which he has already assisted me in my attempts to perform the work of Secretary.

Having thus premised, I proceed to note my scheme.

1. That there be an Honorary Secretary to the Society, charged either alone, or as associated with other Honorary Secretaries, with the special duty of conducting the department of Oriental Literature.

2. That he be answerable to the Society for the proper disposition of their funds, under the immediate instructions of the President.

3. That he be further answerable to the Society, for the due and proper conduct of

their correspondence, foreign and internal, and that he have the supervision of the publication of the Journal.

4. That he be assisted by a Sub-Secretary, whose duty will be to act under the Secretary for the purposes noted in No. 3, as also for the general charge of the premises, and property of the Society; to check all petty charges and disbursements in the departments of Curator and the Museum, and the Curator of the Museum Economical Geology, before submitting them to the Secretary, and to assist in editing the Journal of the Society under that officer.

5. That he be paid for these services, 200 rupees a month.

And here is the supposed difficulty, the procuring of funds for this salary.

Now the interest of our funded monies—Rupees 13,000, Csoma de Koros' legacy (Rs. 4000) not included; gives about 60 (sixty) rupees a month.

The appointment of a Sub-Secretary will render superfluous that of the Museum Clerk employed under the Librarian on 60 (sixty) rupees a month. The demand from Government of the payment of the contingent charges of the Museum Economic Geology, averaging about 40 (forty) rupees a month will save the Society this sum,* and render it so much available for general purposes.

Thus we should have :—

Interest,	..	..	..	60	} Rs per Mensem.
Salary saved,	..	..	..	60	
Charges saved,	..	..	..	40	
Total Rs.	..	..	..	160	

The residue necessary for the complement of 200 rupees, may be easily spared out of the sum (about 4,000 rupees,) which used to be spent annually by the Society in the purchase of the Journal for their members, and I can safely say, that the expense will be more than trebly covered by the saving which close supervision and better management must induce in the cost and charges of editing the Journal as the property of the Society.

I would have suggested the re-organization of our Accountant's Office and Assignment to the Sub-Secretary of the duties belonging to it, but I cannot recommend that scheme.

The Sub-Secretary should be relieved from all financial responsibility, and be left to devote himself to the active duties of his peculiar position. Mr. PIDDINGTON, with his other work, will have, as I see he has now, more than ample occupation for all his time in the Sub-Secretariat, the duties of which he is indeed experimentally performing.

Sub-Secretary's Salary.

Interest,	..	..	..	60
Salary saved,	..	..	..	60
Costs ditto,	..	.	..	40
Allowed from Journal,	..	..	..	40
Total Rs.	..	..	..	200

As the contingent charges of the Museum Economic Geology, may be occasionally under 40 rupees, it might be well to rate our new outlay at 50 rupees a month, for

* I never sent in this bill to Government, keeping the demand until the Museum Rooms for the institution had been built at the Society's cost and charges, when it might justly be made.

which the Society will secure efficiency of a sterling character in the important duties of their Secretariat.

Should the Society, as noted by the Honorable the President, think my services as Honorary Secretary of any value, I willingly offer those, though save as respects some portion of Oriental Literature, they are very worthless. H. TORRENS.

March 24, 1843.

N. B.—Serious and severe illness has delayed the preparation of this paper.

This memorandum having been again read to the meeting was unanimously passed and approved, and Mr. H. Torrens was accordingly appointed Honorary Secretary, and Mr. H. Piddington Sub-Secretary to the Society, under his superintendence, upon a salary of Rs. 200 per month.

Sir L. Peel, Chief Justice, and W. Seton Karr, Esq., proposed at the former meeting were ballotted for, and unanimously elected as members of the Society.

Ordered.—That the usual communication of their election be made to Sir L. Peel and Mr. Karr, and that they be furnished with the rules of the Society for their guidance. The following gentlemen were proposed as Members of the Society:—

Lieut. R. Strachey, B. E. proposed by Lieut. Baird Smith, B. E., seconded by Mr. Piddington.

Capt. Goodwyn, B. E. proposed by Lieut. A. Broome, B. H. A. and seconded by Lieut. Col. Forbes.

The Honorable H. T. Prinsep was also proposed as a Honorary Member by the Honorable the President, seconded by Sir H. Seton.

Library.

The following Books were presented:—

Books received for the Meeting of the Asiatic Society, on the 12th April 1843.

The Calcutta Christian Observer, April, 1843. Presented by the Editor.

The Oriental Christian Spectator. Bombay, February and March 1843. Presented by the Editor.

The Calcutta Literary Gleaner, March and April 1843. Presented by the Editor.

Proceedings of the Academy of Natural Sciences of Philadelphia, 1841-42. vol. 1.

Nos. 1 to 16, from the Academy

List of the Members and Correspondents of the Academy of Natural Science of Philadelphia, 1841, from the Academy.

Second Bulletin of the Proceedings of the National Institution for the promotion of Science. Washington 1842. Presented by Dr. Harlan.

Redfield on Whirlwind Storms, with replies to the Objections and Strictures of Dr. Hare. Presented by the Author.

Redfield's Reply to Dr. Hare's further objections relating to Whirlwind Storms. Presented by the Author.

- State of New York, in Assembly, January 1840. No. 50, and February 1841, No. 150. Presented by Mr. Morton.
- Bernier's Travels, translated from the French by J. Stuart. Calcutta, 1826. Presented by Dr. Roer.
- Nicollet's Essay on Meteorological Observations. Presented by Dr. Morton.
- Morton's Description of some new species of organic remains of the Cretaceous Group of the United States. Presented by the Author.
- Morton's Inquiry into the distinctive characteristics of the Aboriginal race of America. Presented by the Author.
- Catalogue of Skulls of Man and the inferior Animals, in the collection of S. G. Morton. Presented by Dr. Morton.
- Morton's Memoir of William Maclure, Esq. Presented by the Author.
- Morton's Remarks on the so-called Pigmy race of the Valley of the Mississippi. Presented by the Author.
- Morton's Some Remarks on the ancient Peruvians. Presented by the Author.
- Audubon and Bachman's description of new species of Quadrupeds inhabiting North America. Presented by Mr. Morton.
- Wood's Memoir of the Life and Character of the late J. Parrish. Presented by Dr. Morton.
- Roger's Third Annual Report on the Geological Survey of the State of Pennsylvania. Presented by Dr. Morton.
- Morton's Crania Americana (from the American Journal of the Science and Arts, No. 2. vol. 38. Presented by Dr. Morton.
- Say's Descriptions of some new Terrestrial and Fluvial Shells of North America. Presented by Dr. Morton.
- Pinnock and Moore's Report of Experiments on the Action of the Heart. Presented by Dr. Morton.
- Report on the strength of materials for Steam Boilers. Presented by Dr. Morton.
- Wight's Icones Plantarum Indiæ Orientalis, vol. II. part IV, from the Government of India.
- Morton's Crania Americana, or comparative view of the Skulls of various Aboriginal Nations of North and South America. Philadelphia, 1839. Presented by the Author.
- Herapath's Railway and Commercial Journal, January 7th, 1843, vol. v. No. 178.

Read the following papers; viz. Letter No. 502, dated 29th March, 1843, from Mr. Secretary Thomason, transmitting a report by Lieut. J. D. Cunningham, of Engineers, on the province of Kunawar and the adjacent Bhottee districts, for publication in the Society's Journal, should it be deemed fit to do so.

Letter from Lieut. R. Baird Smith, of Engineers, of 25th March, 1843, forwarding for publication in the Journal the first part of a Memoir on Indian Earthquakes.

Letter from Mr. Officiating Secretary Halliday, of 3rd March, 1843, forwarding for presentation to the Society, a volume of Icones Plantarum

India Orientalis, or Figures of Indian Plants, by Surgeon R. Wight, of the Madras Establishment.

Letter from Sam. George Morton, Esq. of Philadelphia, of 4th Aug. 1842, forwarding for presentation to the Society, a copy of his "*Crania Americana*," and requesting to be furnished with skulls of Hindoos and other oriental nations, to aid him in the pursuit of his comparative investigations, which now embrace all the races of men.

Letter from B. H. Hodgson, Esq. dated 1st instant, communicating that Mr. Howard is about to come forth in the present month with the first division of the Zoology of Nipal (Mammalia), and that he expects half the price of each division of the work, or Rs. 25, to be paid in advance.

Read the following report from the Officiating Secretary :—

1. The Officiating Secretary reports, that having, as was desired, made enquiries as to the expence of raising the whole roof over the stair-case instead of a skylight, he is informed that this would cost at least 800 Rupees. Mr. Bolst, our architect, thinks it very dangerous to undertake, with reference to the state of the architrave beams round three sides of the square and that of the screen wall on the fourth. By taking away the shelves on brackets which support the model of the Taj, and that of the Lama temple, and by opening the doors of the new rooms, bird-room and fossil room below, it has been found that a sufficient light for the objects intended to be placed below the stairs may be obtained. It is therefore thought by Mr. Torrens and himself, that for the present the skylight may be dispensed with.

2. It was reported at the January meeting, that Major Troyer had advised the Secretary that the French Government had renewed the allowance of 1500 francs, (650 Rs.) for copying the Veds. Upon a reference to the French Government at Chandernagore, the authorisation which this letter contains has been received, and when the money is brought to account, the Society will debit the French Government with the balance of 233 : 7 : 9 Rs., due from it to the late Mr. J. Prinsep's estate, and which was provisionally paid by the Society. See Proceedings for June 1839.

The arrangements for continuing the copying have been duly made, and the work is in progress.

It would be highly advisable that the Society should determine as to what individuals and Societies the Journal should be sent. The American Societies and some individuals in that country are most attentive in sending us their publications, as also some in France. As will be noted by the accompanying letters, we are much arrear with our American friends. I have obtained a list of our present distributions, which is annexed, and I may mention the Academie Royale de Bordeaux as a public body regularly forwarding to us its transactions, but, as it would appear, not receiving our Journal.

List of the Journal of the Asiatic Society distributed gratis on behalf of the Society, by Messrs. Allen and Co. of London.

Professor Wilson, .....	.....	1
Asiatic Journal, .....	.....	1
Royal Society, .....	.....	1
Royal Asiatic Society, ....	.....	1
Edinburgh Philosophical Journal, .....	.....	1
Royal Institution, .....	.....	1
Philosophical Magazine, .....	.....	1
Athenæum, .....	.....	1
Professor Heyne, .....	.....	1
Baron Von Hammer Purgstall, .....	.....	1
University of Bonn, .....	.....	1
Royal Society of Edinburgh, .....	.....	1
Spectator, .....	.....	1
Professor Schlegel, .....	.....	1
		14
Dispatched direct from Calcutta, to Major Troyer, Paris,		10
Sir H. T. De la Beche, .....	.....	1

Total..... 25 Copies.

Read the following letters of 12th instant, and lists from Dr. Roer Librarian.

To H. Piddington, Esq. Acting Secretary, Asiatic Society.

SIR,—In continuation of my arrangement of the Antiquities of our Museum, I have the honour of forwarding three lists to you; viz. of the armour, of the musical instruments, and of the models of implements, tools, specimens of manufacture of the natives of India and other Asiatic nations. The arrangement of those articles has now been completed, and it is satisfactory to me to inform you, that the names of the donors and the locations of the greater part of them have been ascertained and duly noted.

I have the honour, to be, Sir,

Your obedient servant,

12th April, 1843.

G. ROER.

Models of Implements, Tools, Machines, &c.

1. A Hindustani plough, called Hal. Donor Miss Tytler. As. Res. Vol. xv. App. xxv.
2. A Hindustani drill plough. Donor ditto ditto.
3. Model of a native plough. Donor G. T. Lushington, Esq.
4. A Javanese plough. Donor Capt. T. Fiddes. As. Res. Vol. xvii. App. xvii.
5. Plough used by the Parbuttiaks. Donor Dr. A. Campbell.
6. Instruments for digging and clearing lands of weeds. Donor Miss Tytler, As. Res. Vol. xv. App. xxv.
7. A Hindustani spade, called Phaura. Donor ditto ditto.
8. A spade, called Koo by the Newars, and Kodalli by the Parbuttiaks. Donor Dr. A. Campbell.

9. Three Hindustani sickles or Hansuas Donor Miss Tytler. *As. Res.* Vol. xv. App. xxv.
10. Henga, an instrument for pressing the seeds into the ground, and breaking clods, like the English roller. Donor Miss Tytler, *As. Res.* Vol. xv.
11. An instrument, called Kurmaghan by the Newars, used for breaking the clods and pressing the soil. Donor Dr. A. Campbell.
12. Roochi-mughan, used to cover sown wheat and gogha, or Upland rice. Donor ditto ditto.
13. Chassa-mughan, used to smooth the flooded beds, in which the seeds and takri are sown, and also to prepare the soil for sowing vegetables, pepper, (red) ginger, &c. Donor ditto ditto.
14. Poo-retcha, used for weeding the dry rice. Donor ditto ditto.
15. Chong-kuki, used for weeding the dry rice. Donor ditto ditto.
16. Rûé, used for spreading grain and collecting it in heaps after its removal from the straw. Donor ditto ditto.
17. Rûti, used for making chawl, (rice) from dhan and for pounding bricks. Donor ditto ditto
18. Chon-rumna. Donor ditto ditto.
19. A dhunki, or chalni, used for separating grain from the husk Donor Miss Tytler. *As. Res.* Vol. xv.
20. Another, ditto ditto.
21. Ukhli-mûsel, or pestle and mortar for separating grain from the husk Donor ditto ditto.
22. Dheuki, used for ditto ditto. Donor ditto ditto.
23. Ooghan-okua, used by the Parbuttiaks for ditto ditto. Donor Dr. A. Campbell.
24. Sup, used for winnowing corn. Donor Miss Tytler. *As. Res.* xv
25. A model, shewing the manner in which the oxen tread out the corn. Donor ditto ditto
26. A mill for grinding corn, called by the natives janta-chakhi. Donor ditto ditto.
27. Another ditto ditto.
28. Model of a grinding stone. Donor ditto ditto.
29. A kolhu, or Hindustani oil mill. Donor ditto ditto.
30. An oil press, called Chikon-sa. Donor Dr. A. Campbell
31. Model of the native mill for grinding mustard seed. Donor G. T. Lushington, Esq. *As. Journal*, iv. p. 56.
32. A sugarcane-mill or press, called Tura by the Newars, and Rula by the Parbuttiaks Donor Dr. A. Campbell
33. A water-mill, called Pan-Chaki on the Northern Doab and Western hills, and Kan by the Newars. Donor ditto ditto.
34. Model of a still for distilling spirits, made of the original materials. Donor Miss Tytler. *As. Res.* Vol. xv.
35. Model of a still for distilling rose water, made of the original materials. Donor ditto ditto.
36. Mûli, a machine for raising water from the well. Donor ditto ditto.
37. Mut, used in Hindustan for raising water. Donor ditto ditto.
38. A machine for raising water Donor ditto ditto.
39. A bambû basket with which the natives of India water the rice fields. Donor ditto ditto.
40. Koring, a Persian wheel for watering land from a tank or ditch. Donor ditto ditto
41. Cherkhi, used for separating the seeds from the cotton wool. Donor ditto ditto.
42. A ditto ditto.
43. Dhunki, an instrument in two pieces for beating cotton after the seeds have been separated. Donor ditto ditto.
44. Kaman, a bow with which the spinner beats cotton Donor ditto ditto
45. Cherkha, spinning wheel of India. Donor ditto ditto.
46. Model of the native spinning wheel. Donor G. T. Lushington, Esq. *As. Journ.* vol. iv. p. 56.
47. A Weaver's Loom, with a weaver, holding a shuttle in his hand. Donor Miss Tytler. *As. Res.* vol. xv
48. Model of an instrument, shewing the first stage of preparation for the loom. Donor ditto. ditto

- 49 Model of an instrument, shewing the second stage.
 50. Reel, in which the skeins of thread are put. Donor ditto ditto.
 51. Pareta, or reel of India. Donor ditto ditto.
 52. Model of a Loom for weaving bobbin and tape.
 53. Ditto ditto, for weaving Hindustani woollen carpets
 54. Ditto ditto, for cotton carpets, called satriujé.
 55. Another ditto ditto.
 56. Ditto, for preparing chicks
 57. Ditto ditto, jhalar.
 58. Part of the Floor of a House, where golden thread is prepared
 59. An Apparatus for drawing golden thread.
 60. A ditto silver thread.
 61. A Loom for weaving coarse canvas Donor ditto ditto
 62. A ditto ditto.
 63. A ditto for weaving blankets. Donor ditto ditto.
 64. Model to make embroidered cloth. Donor ditto ditto.
 65. A Machine for preparing single threads from the leaves of the sirkhi grass. Donor ditto ditto
 66 A bundle of Hemp Cords. Donor ditto ditto.
 67. Daéra, instrument for spinning hemp. Donor ditto ditto.
 68 69. Two Instruments to twist thread. Donor ditto ditto
 70. An Apparatus, used in Hindustan for making butter. Donor ditto ditto.
 71. Model of a Saw, used by the natives of Hindustan Donor ditto ditto
 72 Ditto of an Instrument for drawing circles on the ground with carpenter's hatchets and saw
 Donor ditto ditto.
 73-92 A variety of Tools and Instruments
 93. A small Harpoon. Donor R. Home, Esq As. Res. xii.
 94-97. Various Tools.
 98 A Chak or Potter's Wheel Donor Miss Tytler.
 99. Model of a Potter's Instrument for preparing earthen pots Donor ditto ditto.
 100. Model of a Blacksmith's Forge and Bellows, with two anvils. Donor ditto ditto.
 101. Model of a steel-yard. Donor ditto ditto.
 102. Model of the steel-yard, used by the natives for weighing, (called tulah.) Donor Raja Kishen Bahadur
 103 Model of an Apparatus, for catching birds. Donor Miss Tytler.
 104. Ditto of a Frame, for making tallow candles Donor ditto ditto.
 105. Ditto of an Apparatus, for making paper. Donor ditto ditto.
 106-110. Five wooden Stereotypes from Tibet.
 111-133. Twenty-three Models of Kitchen Utensils of Hindustan
 134. A native cart. Donor Miss Tytler, As. Res. Vol. xv.
 135. A bullock cart, for conveying gram. Donor G. T. Lushington, Esq.
 136 A Girth, for a bullock.
 137. Ruth, native carriage drawn by bullocks. Donor G. T. Lushington, Esq.
 138. Ekha-garee, carriage drawn by one horse. Donor Miss Tytler.
 139 Ruth, drawn by two horses. Donor G. T. Lushington, Esq.
 140. Sagur-garee. Ditto ditto
 141. A Carriage, for females. Donor Miss Tytler

B. Specimens of Manufacture.

a. OF COTTON.

142. Specimen of Erna cloth (once washed.) Donor Dr. R. Tytler.
 143. Specimens of Erna cloth. Donor ditto ditto.

144. Toos, a sort of coarse cloth, (unwashed.) Donor ditto ditto
 145. Toos, white cloth (20-22 Rs. per Than of 27 by 1 yard.) Donor ditto ditto.
 146. Mulida, dark-red cloth. (5 Rs. per Than of 7½ yards, broad 1 yard.) Donor ditto ditto,
 147. Mulida, blue, (5 Rs. a Than.) Donor ditto ditto.
 148. Nimbee, blue, (3 Rs. 8 As. per Than of 8 yards.) Donor ditto ditto.
 149. Penchan, white cloth, (30-34 Rs. per Than of 27 by 1 yard.) Donor ditto ditto.
 150. Punkhee, white, (2 Rs. per Than of 9 by 1 and 2 yards) Donor ditto ditto.
 151. Numboo, green, (3 Rs. 8 As. per Than of 8 yards.) Donor ditto ditto.
 152. Specimens of Mugah cloth, (unwashed.) Donor ditto ditto.
 153. Cloth of the floss of the Mugah. Donor ditto ditto.
 154. A piece of coarse Cotton (unwashed.)
 155. A piece of striped Cotton. Donor H. Torrens, Esq.
 156. A piece of white Cotton.
 157. A coarse kind of red Cloth.
 158. A Blanket of cotton and cotton thread
 159. A woollen Blanket, (striped)
 160. A Scarf.
 161. A ditto ditto.
 162. A piece of Cloth, made of the bark of the mulberry tree of the Friendly Islands. Donor Capt. P. Dillon. As. Res Vol. xvi. App. v.
 163-70. Eight ditto ditto.
 171. Specimens of Cloth, made by the Javanese from the bark of the Upas tree. Donor Dr. R. Tytler.
 172. A Coat, made of the bark of a tree, (Java.)
 173. A Chandua, (cotton cover against the dew.)
 174-198. Specimens of cotton and wool, manufactured at Nepal, Tibet and Botan. Donor Dr. A. Campbell. As. Journ. vol. v. p. 127.
 199. English Shawl from Herat.
 200. Specimens of Tibetan sheep wool and cloth
 201. Ditto ditto of goats' wool.
 202. Ditto ditto of Bactrian camel.

b Of other Articles.

1. FROM INDIA.

203. A Box to keep chunam, (lime.)
 204. A Box to keep shindúr, (Vermillion)
 205-206. Two small wooden Boxes from Java.
 207. Golap-pass, a silver vessel for sprinkling rose-water.
 209-211. Models of a complete set of the hooka. Donor Miss Tytler.
 212. A square Lantern of tin.
 213. Silver ornament of a horse.
 214. Bridles and Ornaments of a horse, (in a state of great decay.)
 215-16. Two marble Cows with calves, from Joypore.
 217. Ditto ditto Elephant, mounted.

218. Ditto ditto Horse, mounted.
 219-20. Two wooden Horses, mounted.
 221-222. Two wooden Elephants.

2. FROM AVA.

223. A set of playing Cards. Donor Dr. Tytler. As. Res. Vol. xvi, App. xiii.
 224. Dominos. Donor R. Home, Esq. As. Res. Vol. xii, App. xxx.
 225-27. Three metal Boxes.
 228-29. Two more of a different shape.
 230-60. Thirty-one specimens of Burmese Lacquered or Japanned-ware from Ava.
 Donor Major Burney. As. Journ. Vol. i, p. 158.
 261. Instrument for fixing the varnish.
 262. Paper, made of the remains of vegetable matter, remarkable for its hygrometrical quality. Donor Mr. Swinton.
 263. Paper made in India.
 264-65. Two pieces of Leather, dressed with oil and tallow. Donor Mr. Swinton. 1833.

3. FROM NEPAL.

- 266 Ornamented Chata. Donor Dr. L. Burlin.
 267. Ditto ditto. Donor Miss Tytler. As. Res. Vol. xv.
 268-69. Two Steels for striking fire. Donor J. Brown, Esq. As. Res. Vol. xii, App. xxi.
 270. A Bowl of a Pipe, made of Arracan clay. Donor Dr. R. Tytler. As. Journ. Vol. v. May 1836.
 271-72. Two Inkstands Donor Dr. A. Campbell.
 273-274. Two Inkstands with pencase, of peculiar construction.
 275. A ditto ditto of copper.

4. FROM TIBET.

- 276-79. Four pairs of Spectacles. Presented by the Government of India. As. Res. vol. xvii. p. 622.
 280. A pair of Eye-covers. Donor ditto ditto.
 281. An Eye-cover, (Tibetan?)
 282. A pair of ear-covers Donor Government of India.
 283. A ditto ditto, (Tibetan?)
 284. A Fan. Donor ditto ditto.
 285. A ditto in a case. Donor ditto ditto.
 286. A silk Fan Case, (Tibetan?)
 287. A silk Purse. Donor ditto ditto.
 288. A silk Bag. Donor ditto ditto.
 289. A ditto ditto, (Tibetan?)
 290. A silk Cover, (Tibetan?)
 291. A Brush with napkin. Donor ditto ditto.
 292. A Watch Case. Donor ditto ditto.
 293. Inkstand and Case. Donor ditto ditto.
 294. Knife and Sticks. Donor ditto ditto.
 295. Ditto ditto.

296. A wooden Cup. Donor ditto ditto.
 297. A pair of Mogul Boots. Donor ditto ditto.
 298. A ditto Shoes. Donor ditto ditto.
 299. A Lantern in a tin case. Donor ditto ditto.
 300. A ditto in a red box. Donor ditto ditto.
 301. Cover for a snuff box. Donor ditto ditto.
 302-304. Three Prayer Cylinders.
 305. A Cashmere Box Donor Mr. Moorcroft. 1833.

5. FROM CHINA.

305. Four pair of Tea Cups and Saucers, from Ningpo. Donor Lieut. J. Brockman, Asiatic Journal, Vol. xi. p. 582.
 306. Two ditto of Sugar-pots with plates. Donor ditto ditto.
 307. Two plain Cups with covers. Donor ditto ditto.
 308. A metallic Cup and Saucer. Donor ditto ditto.
 309. Four porcelain Spoons. Donor ditto ditto.
 310. A Tea-pot. Donor ditto ditto.
 311. A pair of Wall Flower Vases. Donor ditto ditto.
 312. Lock and Key. Donor ditto ditto.
 313. A pair of Scales on the principle of the Steel-yard in a wooden box. Donor ditto ditto.
 314. An Opium Box of tortoise-shell. Donor ditto ditto.
 315. A brass Button of a Mandarin's cap. Donor ditto ditto.
 316. A Coat made of Fur. Donor ditto ditto.
 317. A Figure made of soap-stone. Donor ditto ditto.
 318. A Mandarin's Cap. Donor Mr. F. D'Cruze.
 319. A silk Scarf. Asiatic Journal, Vol. v. p. 383.
 320. Soles of Chinese Shoes.
 321. Chinese Chatta-hat of palm leaves Donor Gen. Hardwicke. As. Res. Vol. xv. App. xxxiii.
 322-26. Chinese Hats of sizes.
 327. Model of a China Lady's Foot. Donor W. K. Ord, Esq. As. Res. Vol. xvi. App. xxi.
 328. An Oil-burner.
 329. A Pipe.
 330-31. Two ditto. Donor R. Home, Esq. As. Res. Vol. xii. App. xxiv.
 332-36. Five Pipes from Chinese Tartary.
 337-38. Two Compasses. Donor R. Home, Esq. As. Res. Vol. xii. App. xxiv.
 339. A set of China Chopsticks. Donor ditto ditto.
 340. A ditto ditto.

Ornaments, Ornamental Implements, Dresses, &c.

- 341-46. Ornaments, worn by the Oorah women, consisting of 4 Bracelets, a Ring and an Ear-ring. Donor Baboo Ramcomul Sen, As. Journ. Vol. v. p. 559.

- 347-48. Two brass Sticks for putting black powder into the eyes, used by the Hindus.
349. A brass Stick to colour the forehead.
350. An Ornament for the arm, worn by the natives of India.
- 351-52. Two brass Bracelets.
353. Lac Bracelets, used by the women of India. Donor Miss Tytler, As. Res. Vol. xiv. App. iii.
- 354-56. Three Armlets, worn by Shuniasis.
- 357-58. Two pair brass Bracelets, worn by Shuniasis, (from Java.)
359. Necklace of Shells. Donor Col. Morrison. 6th Nov. 1839.
360. Another smaller one.
361. Necklace of Seeds and Shells from Gurangupune. Donor J. Palmer, Esq., As. Res. Vol. xiv. Appendix xxix.
- 362-63. Two more of Shells.
364. A Necklace made of tulush wood, and worn by the worshippers of Vishnu.
- 365-66. Two Necklaces of a kind of nut, worn by the worshippers of ditto
367. Rudracsha Mala. Donor H. H. Wilson, Esq. As. Res. Vol. xii. App. xxiii
368. A Necklace of Stone, worn by Fakcers.
369. A ditto ditto.
370. A ditto ditto.
371. A Hindu Beggar's Dress and Bag
372. A ditto ditto Begging Dish made of Human Skull.

*Models of Implements, Specimens of Manufacture, Utensils, &c from the Eastern Islands.**

373. An Instrument to strike fire, from King George's Sound Donor J. H. Stocqueler, Esq.
374. A Mallet from ditto ditto. Donor ditto ditto.
- 375-77. Three Wooden Dishes from the South Seas, Manicola Tucopia and Majeet. Donor Capt. P. Dillon.
378. Fishing Line, &c. from the Eastern Islands. Donor R. Home Esq. As. Res. Vol. xii. Appendix xxiv.
379. Shing from ditto ditto Donor R. Home, Esq.
380. Ditto ditto.
381. A carved Ornament of a boat.
- 382-87. Pillows from the Friendly Islands. Donor Capt. P. Dillon. As. Res. Vol. xvi.
388. A Box from the Eastern Islands.
389. A Work Box from ditto ditto.
390. A Box from New Zealand. Donor Capt. P. Dillon, As. Res. Vol. xvi. App. ix.
391. A Work Box from ditto ditto. Donor ditto ditto.
- 392-93. Two carved Musical Instruments from the Eastern Islands
394. Bracelets of Shells from ditto ditto.

* See also 162 to 172.

395. Bracelets of Boar Tusks. Donor R. Home, Esq. As. Res. Vol. xii. p. 23.
 396. Ornaments from---
 397-402. Mangeer Fans.
 403-4. Two mother of pearl shell Ornaments of New Zealand Chiefs. Donor Gen. Hardwicke. As. Res. Vol. xii.
 405. Cassava Bread from Dampier's Straits. Donor J. Bell, Esq. As. Journ. Vol. v. p. 517.

Curiosities and Sundry Articles

406. A Lama's Thigh-bone (in the form of a flute)
 407. Specimens of mud casts of the Lingam, which are worshipped by the Hindus, while performing their ablutions.
 408. Model of a Granary.
 409. Fragment of the tusk of an Elephant with a ball
 410. A piece of Planking and Copper Sheathing from the bottom of the Ship *Adele*, pierced by the horn of Narwhal on her voyage from Penang to Akyab, on the 24th January, 1833
 411. Copper, from the bottom of the Ship *Guide*, struck by lightning while in dock. Donor J. M. Seppings, Esq
 412. Cover of a box.
 413. Specimens of Horse Shoes.
 414. Specimens of Malacca Tin, presented by Lieut. Newbold. 1835.
 415. Malayan Head-dresses, presented by Gen. Hardwicke. As. Res. Vol. xii.
 416. Two Malayan Pipes.

Musical Instruments.

NEPALESE.

- 1-2-3. Horns, called in Hindoe Bhorang. Donor M. S. Bramley, Esq.
 4. Bass Horn, of copper, called Singha. Donor ditto ditto.
 5-6-7. Hautboys, or Sanâis. Donor ditto ditto.
 8. Trumpet, or Phongâ, Newari. Donor Dr. A. Campbell.
 9-10. Flageolet, or Mohalli. Donor ditto ditto.
 11-12. Horns, or Singha, Nepal. Donor ditto ditto.
 13. Nug Pheni, or Turi, Parbattiahs. Donor ditto ditto.
 14. Bansuli, Flute or Fife. Donor ditto ditto.
 15. Beli, or Krisna-beli, Newari flute. Donor ditto ditto.

COLE COUNTRY.

16. Tampoorah, used by the hill people near Hazaribagh. Donor Lieut. J. Audry.
 17. Ektarraw ditto ditto Donor H. H. Wilson, Esq. Donor Baboo Ramcomul Sen.

BENGALÈSE.

18. Khartala. Donor H. H. Wilson, Esq
 19. Gojee. Donor ditto ditto.

20. Doobdoobi.
21. Been Setara.
22. Setara.
23. Serang.
24. Sarinda.
25. Bank.
26. Bhorang.
27. Bansuli.
28. A pair of Kartala.
29. A ditto small ditto.
30. A pair of Mandira.
31. Jhang.
32. Kansara.
- 33-34. Sanayis.
35. Dhol.
36. Dholaka.
37. Jaraghay.
38. Tasa.
39. Dagara.
40. Kada.
41. Ram-a-Kada.
42. Dhamsha.
43. Tikaras.
44. Jayadhak.
45. Mridanga.
46. Madala.
47. Pakwaz.
48. A pair of Tabla.
49. Dampa.
50. Dara.
51. Khanjaris.
- 52-53-54. Sanayis.

CHINESE.

55. Flute. Donor, Dr. R. Tytler.

BURMESE.

- 56-57. Fiddles.
58. Harp.

UNIDENTIFIED.

59. A double Flute or Fife.
60. A Fiddle.
61. A Bamboo Flute.
- 62-63. Bamboo Flutes.

Armour and Weapons.

a. NĒPALESE.

1 to 4. Swords. Donor, B. H. Hodgson, Esq.

5 to 12. Swords.

13-14. Sword, Kukri and Khonta. Donor Genl Bhuna Sinha, Journ. As. Soc.
Vol. v. p. 56.

15. A Dagger. Donor ditto ditto.

16-17. Daggers

b. ORISSA

18. Battle Axe. Donor J. G. Balmain, Esq.

19. Six Arrows from the hills of Kuttuck, used by the Parks. Donor ditto ditto.

c. NAGA.

20-21. Spears. Donor Mr Milne.

22-23. Swords. Donor ditto ditto.

24-25. Battle Axes. Donor ditto ditto.

26-27. Swords

28. War Cap, worn by the chiefs. Donor Mr. Milne.

d. HINDUSTANI.

29. Sword dug up from six feet under the bed of the Jumna river. Donor Lieut. Burt.

30 to 35-36. Cut-and-thrust sword. Donor H. Torrens, Esq. As. Journ. May 1842.

37 to 41. Copper Weapons found in the earth near Futtehgerh. Donor T. Williams,
Esq.

42. Copper Dagger.

43 to 46. Daggers.

47. Copper Head of a Spear. Donor Capt. Presgrave.

48 to 51. Blades of Spears.

52 to 65. Spears, (silver mounted.)

66-67-68. Spears, (brass mounted.)

69 to 74. Spears, (plain ones.)

75. Matchlock. Donor W. L. Gibbon, Esq.

76. A single barrel Gun, with double lock. Donor Lieut. Anderson.

77 to 82. Battle Axes.

83-84-85. Chain Shirts.

- 86-87. Chain Collars.
 88 to 91. Iron Breast Plates.
 92 to 95. Ditto Plates for the back.
 96. Ditto Helmet
 97. Ditto ditto, covered with iron net.
 98. A Cap.
 99-100. Two Gauntlets

MERGUI.

- 101-102. Shields used by the warriors.
 103. Helmet.
 104. Brass Collar.
 105. A pair rattan Cases, worn on the legs, under the slight bamboo rings, to give the calf a large appearance.

ASSAM

106. Sword. Donor Dr. L. Burlini.
 107. Bhotian Standard, carried before the King in war. Donor Capt. Bogle.

CHOTA NAGPORE.

- 108-109. Iron Shields.
 110. A brass Shield. Donor G. W. Hamilton, Esq.
 111. Chok-krow.

BURMESE

112. Sword, with silver mounted scabbard and handle.
 113. War-hat, worn by the Singphos. Donor Col. A. Buxney.

MALAYAN.

114. An ornamented Spear. Donor Capt. M. Kittoe.
 115. Lahore Matchlock, purchased from one of Runjeet Singhs' Jhounhurras. Donor H. Torrens, Esq. As. J. May 1842.
 116 to 17. Two Peshawer fire-locks, mounted, one after the Native and one after the English fashion; the locks made by Cashmere Gunsmiths of Ludiana, to imitate Towerlocks. Donor H. Torrens, Esq. May 1843
 118. A Gun. Donor ditto ditto.
 119. A Knife used by the Tribes about the Khyber Pass, or Afreddees, Momunds, &c Donor ditto ditto.
 120. Pirate's Dart Tube. Donor Lieut. C Mackenzie, Journ. As. Soc. Vol. v. p 517
 121. Ditto ditto, with a blade answering for spear.

122 to 124. Swords.

125 to 127. Krises.

128. Malay Pirate's Quiver, containing poisoned darts. Donor Lieut. Mackenzie.

129. Ditto ditto, containing poisoned darts and small arrows.

130. Spear with double blades.

131-132. Spears, (brass mounted.)

133. Spear.

134 to 139. Spears.

140 to 141. Ditto.

142 to 147. Ditto.

CHINESE.

148. Sword from Amoy. Donor H. Torrens, Esq

149. Chain-shot, with chain enclosed, from Chusan. Donor ditto ditto

150. Standard from the Bogue Fort. Donor ditto ditto.

151-152. Two Bows, (deposited.)

153. A Quiver, with 30 arrows, (ditto.)

154. A three barrell'd Pistol, found in the Chief Commissioner's house at Chusan, October, 1841. Donor J. C. Hutchinson, Esq.

155. A Cross Bow found in the Gun Carriage Manufactory, Chuhac, October 1841. Donor ditto ditto.

156. A Quiver from Chusan, taken August, 1840. Donor ditto ditto.

157. A Tartar Bow from Ningpo. Donor ditto ditto.

158. Eleven Arrows, taken from the Arsenal in Chusan, August 1840. Donor ditto ditto

159. A Helmet of a Tartar Soldier, taken from the Arsenal in Ningpo. Donor ditto ditto.

SOUTH SEA ISLANDS.

160 to 163. Spears

164 to 173. Clubs from the Friendly and Feejee Islands. Donor Capt. Dillon. As. Res. XV. App. 9.

174. Club from New Zealand Donor ditto ditto.

175 to 173. Manicolo Clubs. Donor ditto ditto.

174 to 198. Clubs.

199. Paddles and Oars.

200. Battle Axe of whale-bone, answering to a carving knife, from New Zealand.
Donor Capt. P. Dillon.

201-202. Green Zade (Axe-stone) Battle Axe from ditto ditto. Donor ditto ditto.

203. Stone Battle Axes. Donor ditto ditto.

204 to 205. Stone Battle Axes from Mangeer a Island. Donor ditto ditto.

206. Stone Battle Axe, from New Zealand.

207. Copper Shield.

208. Wooden Shield.

EUROPEAN.

209 Sword of Her Highness The Begum Sumroo, which she had worn from the year 1778, to the day of her death, and which was always kept by her bed-side. Donor Mr. Dyce Sombre.

210. Spanish Gun.

Read the following letter, dated Paris, 2nd February, 1843, from Major A Troyer:—

Paris, 2nd February, 1843.

MY DEAR TORRENS,—I had the pleasure of sending you a letter by Baboo Dwarkanath, who must have arrived in Calcutta sometime ago. Now, I avail myself of the opportunity offered me by Mr. Oatley, of the Madras Cavalry, who goes to India via Marseilles and Suez, &c.

In my last letter to you, I touched upon some points, upon which I shall be very happy to receive a few lines from you. How is the copying of the Vedas for the French Government going on? It is now a considerable time since the Asiatic Society of Paris has not received the least communication from you. You cannot imagine what pleasure every thing which comes from Calcutta, causes here in Paris. No. 123 is the last No. of your Asiatic Journal which we received. The political and military affairs in India having now taken a very advantageous turn, it may be expected that some more attention will be bestowed upon peaceable and literary pursuits by some of the many distinguished individuals who live in India. Will you have some more leisure to give us some tract of yours, or a printed edition of some oriental work? Mr. Brookhaus is a very respectable Sanskrit scholar, who sent you some time ago his edition of the *Vrihat Kutha*, with a German translation, he is since several years occupied with the study of Indian tales, and would be very happy to see an edition of the whole Sanscrit work published in Calcutta. I suppose Professor Wilson wrote to the Society about this subject, and recommended it to you as a very laudable undertaking. As to my own occupation—I can but repeat to you that I am still busy here in Paris with the printing of the English translation of the *Dabistan*, in three volumes, which I hope to be able to terminate in the course of this year. In my

last letter I took the liberty to request you to propose to the Society, the nomination of M. Julius Mohl as an honorary member; I beg to repeat my request, on the risk of being thought very intrusive, but not without hope to be excused and pardoned by you. The communication between India and France by the way of Egypt having become so easy and rapid, we may flatter ourselves to hear a little more frequently of you, and of the Asiatic Society of Calcutta, with this flattering hope, let me offer you my best wishes for the continuation of your health and happiness.

Yours most truly,

A. TROYER.

Read the following report from the Curator of the Museum Economic Geology, for the month of March 1843.

Report of the Curator Museum of Economic Geology, for the month of March.

Museum of Economic Geology.—I have the pleasure to announce in this month the discovery of copper ore on Round Island, a small islet off the S. E. end of the Island of Cheduba. The specimens exhibited were forwarded from Ramree by Captain D. Williams, Principal Assistant to the Commissioner of Arracan, who states that they were discovered by a Mug named Neokein, whom he had employed to search for coal. They consist of nodules of native copper, with red and black oxide and silicate of copper. The absence of the sulphurets or arseniates which I have not yet found amongst the specimens, render the ore of a very valuable kind, and if abundant, it will be of much importance. So pure is it, that Captain Williams sends with it a ring made from it by a native workman, which is on the table with the specimens. I have written to him for more abundant supply, and for details on the nature of the vein, rocks, and any other associated ores or minerals which may be found with it, from which some idea of its value as a mining site may be deduced, and due report made, to Government on the subject.

COPPER ORES.

No. 1604.

Ramree, Arracan, March 7, 1843.

MY DEAR SIR,—I now do myself the pleasure of submitting to you, the information you require regarding the copper ore I sent you.

It was obtained on Round Island, which on reference to a chart of this coast at the Marine Board Office, you will find to be an island on the East Coast of Chedooba Island, a little North of Flat Island. There is fresh water on the island, and ships may anchor close to it; plenty of fuel procurable at the spot. The ore was found by digging

for it, and I hope soon to be able to send you specimens of the rock and soil in which it is imbedded.

With regard to the volcano: on a former eruption I forwarded a specimen of a fish thrown up by the volcano, (so the natives say,) to the late Mr. Prinsep, which is now in the Museum of the Society.* The volcano hill is close to Kyook Phyoo, and Mr. Howe will no doubt forward to you what you want.

Yours truly,

D. WILLIAMS.

I forward all the copper ore I can *now* procure from Neokem. He will proceed to dig for more, and bring specimens of the earth and stones.

Having addressed the Sudder Board of Revenue N. W. P. as follows:—

The Secretary of the Sudder Board of Revenue, N. W. P.

SIR,—I am directed by the Committee of Papers of the Asiatic Society to request you will be pleased to submit to the Board, or to the proper authorities, their application for a complete set of the Revenue Survey Maps of the various districts under the Government of Agra, for the use of the Museum of Economic Geology of India, of which the objects are briefly detailed in the circular herewith.

2. As also that the Board will be pleased to assist the objects of the institution by distributing to its various officers the accompanying circulars (of which more will be sent if desired) with its recommendation of their object, as being a matter of the highest import to the financial interests of the country.

I have the honor, to be, &c.

*Asiatic Society's Rooms,
The 23rd Feb. 1843.*

(Signed) • H. PIDDINGTON,
*Acting Secretary, Asiatic Society,
and Curator Museum Economic Geology of India.*

I received the following reply, and the district Maps sent are now upon the table. Our best thanks are due to the Board for its very liberal assistance, and I anticipate with confidence, from the numerous opportunities which its officers have before them, many important additions to our stores.

No. 31 OF 1843

From H. M. ELLIOT, Esq. Secretary to the Sudder Board of Revenue, N. W. P. Allahabad, to H. PIDDINGTON, Esq. Acting Secretary Asiatic Society of Calcutta.

SIR,—I have the honour to acknowledge the receipt of your letter of the 23rd

* I regret to say that it cannot be found.—H. P.

ultimo, and to inform you that as requested therein, a set of the Lithographed Maps noted below has been forwarded to your address for the Museum of Economic Geology.

2. The Printed Circulars, received with your letter, have been distributed to Commissioners of Divisions.

I have the honor, to be, &c.

Sudder Board of Revenue, N. W. P.

Your most obedient servant,

Allahabad, the 14th March, 1843.

H. M. ELLIOT, Secretary.

List of Maps.

1 Map of Ghazeepeer, on Drawing Paper, colored.

1 ditto „ Benares, ditto.

1 ditto „ Jaloun, ditto.

1 ditto „ Jounpeer, ditto.

1 ditto „ Allahabad, ditto.

1 ditto „ Futtehpoor, ditto.

1 ditto „ Cawnpeer, ditto.

1 ditto „ Humeerpeer, ditto.

1 ditto „ Bandah, ditto.

1 ditto „ Agra, ditto.

1 ditto „ Etawah, ditto.

1 ditto „ Muttra, ditto.

1 ditto „ Furruckabad, ditto.

1 ditto „ Barreilly, ditto.

1 ditto „ Bijnour, ditto.

1 ditto „ Shahjehanpeer, ditto.

1 ditto „ Moradabad, ditto.

1 ditto „ Budaon, ditto.

1 ditto „ Pilibheet, ditto.

1 ditto „ Delhi, ditto.

1 ditto „ Paneeput, ditto.

1 ditto „ Hurrianah, ditto.

1 ditto „ Goorgaon, ditto.

1 ditto „ Bhutteeanath, ditto.

1 ditto „ Meerut, ditto.

1 ditto „ Boolundshuhur, ditto.

1 ditto „ Moozuffurnuggur, ditto.

1 ditto „ Seharunpeer, ditto.

1 ditto „ Goruckpeer, ditto.

1 Map of Allygurh, on Drawing Paper colored.

1 ditto „ Dehra Doon, ditto.

1 ditto „ Mynpooree, ditto

Mineralogical and Geological Department.—I mentioned in my report of February the notice which I had incidentally received of the brilliant eruptions of the small volcano of Kyook Phoo, and that I had written to Mr. Howe for details and specimens. These he has very kindly furnished, in replies to my queries, and a chest of specimens of great interest, of which a selection is now on the table.

I am busy examining these, and the results of my work will form a separate paper.

It seems probable, that the mud and the grey shale are nearly the same substance and the grey shale and brick-red clay slate certainly are so; for we have one specimen which is grey shale at one end, and brick-red clay slate at the other, with the dark, half calcined-shale in the middle, thus shewing that the metamorphic process had just reached so far. This is not uncommon where dykes have penetrated argillaceous shales; but I am not aware of any instance in which it is known to be actually going on as it here appears to be, except that it may be supposed to be so in burning coal mines.

Another remarkable singularity in these specimens, which I may briefly notice here, is the low heat of the volcanic flame. Mr. Howe's letter says distinctly, that the station at midnight was rendered as light as day by the flame from the volcano though at 3 or 4 miles distance; and yet we find that the specimens from the sides of the crater are barely calcined, and nowhere approach to fusion. There is no doubt, that the different mud volcanos on Ramree are truly volcanic *fumaroli*,* as may be seen by reference to Lieut. Foley's paper in Vol. iv. of our Journal, and the value of this fact consists in the confirmation which it affords of Mr. Lyell's surmise as to the ancient volcanos of the Eifel. I forbear further remarks here, as in our conclusions so much must depend on the mineralogical character of the specimens which are yet under examination.

We have received from Dr. Harlan, the splendid collection of casts of new Missouriian fossils, which is now on the table. His letter to our associate Dr. Hutton, who has placed it in my hands as Officiating Secretary, is as follows :—

Philadelphia, July 21, 1842.

DEAR SIR,—It is a long time since I have had the pleasure of hearing from you directly, and an opportunity now offering from our port, I seize the occasion to address you, and of forwarding through you, a collection of the casts of fossil bones found in Missouri, and of which I have made a new genus of extinct quadrupeds; a printed notice of these bones accompanies them, as also some other specimens duly labelled, which I beg the Asiatic Society to accept from me as a slight testimony on my part, to the liberal manner they treat their foreign members. I have been absent

* Though not affording sulphureous or saline exhalation.

two years in Europe since I heard directly from you, and on examining my copies of the Asiatic Journal, I find the following numbers have never reached me; viz. 77, 78, 79, 81, 82, 83, 86, 87, 88, 89, 90, 97, 98, 99.—No. 113, is the last come to hand; perhaps you could by application, obtain for me the completion and perfection of my copy of this valuable publication. And if you could aid me by sending for my cabinet any specimens in the department of Comparative Anatomy, you would confer a great favour. I was so unfortunate, during my absence in Europe, as to lose all my anatomical collections by fire, the labour of twenty years. The Professors of the Garden of Plants in Paris, on receiving intelligence of my great and irreparable loss, presented me with a very fine nucleus to form another cabinet, and I am emboldened to ask assistance of all my friendly Correspondents.

A full account of my new fossil bones, *Orycterotherium Missouriensis*, is not yet published, as it will be I hope soon with plates, when I shall not fail to send copies to foreign Correspondents.

As regards specimens in Comparative Anatomy for my cabinet, which is intended to illustrate a series of lectures on Comparative Anatomy and Physical History of Man, any bones, fossil or recent, or casts of them, would not come amiss, but I am particularly desirous to obtain skulls and teeth.

R. HARLAN.

The following Gentlemen were proposed and elected as Members of the Committee of Papers, for the current year 1843, viz.

Vice-Presidents.

Right Rev. the Lord Bishop of Calcutta.

Sir J. P. Grant

Sir H. W. Seton

H. Torrens, Esq.

Members.

Lieutenant Colonel W. N. Forbes,

W. P. Grant, Esq.

Lieut. A. Broome of the Horse Artillery.

C. Hufnagle, Esq.

Dr. J. Hæberlin.

N. B. E. Bailhe, Esq.

S. G. T. Heatly, Esq.

Baboo Prosono Coomai Tagore.

For all the presentations and contributions, the thanks of the Society were accorded to the Donors.



JOURNAL
OF THE
ASIATIC SOCIETY.

AN EIGHTH *Memoir on the Law of Storms in India, being researches relative to the Storm in the Bay of Bengal, at Madras, and in the Arabian Sea, of 22d to 31st October, 1842, with two charts.*
By HENRY PIDDINGTON.

On the 24th October 1842, a severe hurricane was experienced at Madras and other ports on the Coromandel Coast, in which several ships were wrecked or foundered at sea, and much other damage was done. It is the object of the present memoir to trace out the track of this storm, which, there is no doubt, crossed the Peninsula, and is traceable from the Andaman Islands to latitude 14° N., longitude 60° E., or within 6 degrees of the Island of Socotra, an extent far exceeding that to which any Indian Storm has yet been tracked.

The principal sources of information which I have, are from the documents forwarded to me by Captain Biden, the Master Attendant of Madras, who has been most indefatigable in profiting by the advantages which his official position afforded him. It is, therefore, to his zeal in the cause of science, that we mainly owe this memoir; for what I could collect in Calcutta, was so meagre, that it would have been but of little avail in tracing the storm as we have now done.

From the Peninsula, I have reports from Captain Campbell, Revenue Surveyor South of India, Captain Newbold, M. N. I. Assist. Comr. Kurnool, Mr. Crozier, Collector at Malabar, M. Bourgoïn, Governor of Karical, and Mr. Buist in charge of the Observatory at Bombay. These gentlemen have been most indefatigable in their endeavours to procure

me all data within their reach, or that of their friends, and I am much indebted to them for their most ready assistance. I have as usual, noted with every document the sources from whence it was obtained.

I commence, as in my former Memoirs, by giving the documents, abbreviated as much as is consistent with clearness and accuracy of detail; and of these I have first chosen those farthest to the Eastward. I shall then give comparative tables, and lastly, a general summary and remarks, shewing upon what data, and according to what probabilities, when data do not exist, the tracks and storm circles of the charts are laid down. The general reader I trust, finds this part quite *readable*, and the mariner and man of science will be able to judge of the correctness of my inferences from the documents. I shall be greatly obliged by their remarks and corrections from any part of the world; and if at times I may seem to have registered too many details, it will be remembered that all details, and these given with fidelity, are the essential elements for the successful investigation of every complex physical problem, and most especially those relating to a new branch of meteorology.

Abridged Log of the Brig WATERLOO, Capt. Moore, reduced to civil time. Forwarded by Capt. Biden.

20th October.—At daylight strong breezes N. N. E. hazy weather, several water spouts to the South-west and N. E., with a heavy swell from the N. E. Little Andaman at noon N. E. Latitude $10^{\circ} 16' N.$, longitude Chron. $92^{\circ} 23' E.$ P. M. Winds N. N. E. $\frac{1}{2}$ N. E. to midnight. Sunset squally. Midnight strong squalls

21st October.—Daylight fresh breezes, to noon, when Lat. $11^{\circ} 52' N.$, longitude Chron. $91^{\circ} 16'.$ P. M. fresh breezes N. N. E. increasing to midnight.

22d October.—1 A. M. fresh gales N. N. E., daylight increasing, down top gallant yards and masts, and prepared for bad weather. 8 A. M. heavy gales N. E. with squalls and rain, heavy sea running, and vessel labouring much. Latitude $13^{\circ} 27' N.$, longitude Chron. $90^{\circ} 03' E.$ 1 P. M. heavy gales, squalls, rain, and sea to midnight.

23d October.—Midnight wind East, more moderate. At daylight more so, all sail set by noon, when Latitude $14^{\circ} 45' N.$, longitude

Chron. $28^{\circ} 55'$ E. The wind South, S. E. and S. S. E. squally and variable to midnight.

24th October.—Midnight to noon, fresh breeze and cloudy. Noon, Latitude $14^{\circ} 44'$ N., longitude $86^{\circ} 38'$ E.

Abridged Log of the Ship LADY FEVERSHAM from Calcutta to Bombay, reduced to civil time. From Capt. Biden.

22d October.—At noon, by log worked back from 21th, lat. $12^{\circ} 45'$ $\frac{1}{2}$ N. long. $86^{\circ} 5'$ E. P. M. increasing winds with a squally appearance, N. and N. by W. to midnight. At 11, blowing a gale, midnight wind increasing with lightning, furled the foresail, from noon to midnight had run 80 miles S. by E. and S., and 7 miles more to 1 A. M. of the 23d, placing the ship at midnight in lat. $11^{\circ} 26\frac{1}{4}'$, long. $86^{\circ} 22'$ E.

23d October,—At 1 A. M. finding it impossible to run the ship longer, clued up the main top sail. At 1h. 30m. blowing a complete hurricane, when the ship broached to the wind. Bar. at 2 P. M. of 22d, 29.70. At 11 P. M. 29.40. and at 1 A. M. of 23rd 28.40. At 1h. 45m. P. M. blowing a dreadful hurricane at N.; the main and mizen masts fell over on the starboard side, carrying with them the fore top mast; cut away the wreck as quick as possible, and cleared the mast from the ship's sides. At 2h. 45m. the wind suddenly lulled, when the ship fell off and rolled in a most dreadful manner; a sea struck her abaft, which stove in four of the upper stern windows, washing away all the bulk heads in the cuddy, luggage, medicine chest, and every possible thing, however well secured. At 3, the wind shifted to the South and blew furiously, so that no one could stand on deck; lost quarter boats, hen coops, binnacles, bulwarks, and sails fore and aft, the long boat nearly filled, and all the stock drowned. At 3h. 30m., the hurricane at its greatest force. Bar. at 28.30. At 5h. commenced to abate, mustered all hands and found the chief mate and one seaman seriously injured, sounded the pumps at three feet and six inches, turned to and pumped her out. The main yard having fallen through the deck on the starboard side, was the cause of so much water being in the ship, boused it up and secured the hole, cleared and cut away the remainder of the wreck; still a heavy sea, but wind gradually abating. At noon strong winds at E. S. E. with heavy squalls and rain, all hands employed getting prepared to make some sail. At noon lat. observed $12^{\circ} 4'$ N. P. M. strong winds

and squally with less sea, all hands employed clearing away. At sunset pumped ship at two feet, squared the fore yard, and made all clear for getting some sail up. Midnight moderate winds at E. S. E., ship's head from N. N. E. to N. E.

24th October.—Day-light bent the fore sail, and fore top mast stay sail, set them, the mizen gaff towing astern got it in, and rigged it for a fore try sail. Noon moderate weather, with occasional squalls of rain. Lat. observed $13^{\circ} 16'$ N. long. by Chron. $86^{\circ} 85'$ E. Course made from Saturday at Noon N. 16° W. 32 miles.

The following abstract of the Log of the Ship WHITBY, alluded to by Capt. Biden, was subsequently forwarded to me by that gentleman, but unfortunately the place of the vessel is nowhere noted. Captain Biden thinks, she must have been about 30 leagues to the Eastward of the LONDON, but how far South we are ignorant. I have thus not marked her position on the chart. It is possible that the Brig alluded to was the ANN METCALFE, though in her Log the loss of the fore topmast is not alluded to, and a note indorsed on the extract says only, that she had "SPRUNG a topmast, and put in to refit." I suppose "lost" may have been intended. With the ANN METCALFE also, the shift takes place at noon, and with the WHITBY at about 9 A. M. though in such weather the time is seldom exactly noted.

On the afternoon of the 22d October, the weather was hazy, with moderate breeze at N. N. E. The appearance to windward was such as North country seamen call "greasy." The Barometer fell in the course of the day from 30.10 to 29.90, the breeze increased during the night with occasional showers, and veered to N. N. W. At midnight, the Barometer 29.78. About 3 A. M. 23d, the storm commenced at N. N. W., increasing until 7 A. M., when it blew a perfect hurricane, veering to N. N. E. and N. E. with lightning; the Bar. now fell rapidly, and at 8 A. M. stood at 28.45, having fallen 1.65 in 20 hours. At 9 A. M. after a most violent gust at E. N. E. it suddenly fell a dead calm. *A Brig was then in sight without a fore topmast.** A large number of birds of the Petrel genus alighted on board, and

* Possibly the *Ann Metcalfe*, as above.

took shelter in the boats and under hencoops. At 10.30, the wind sprung up suddenly from S. W., veered to South, and 11.30 to S. E., and again blew with increased violence, accompanied with rain; the Bar. rising slowly. At 1 P. M. the Bar. rose rapidly, the storm gradually abated with heavy rain, and at 6 P. M. settled down to an ordinary gale, at which time the Bar. was 29.86. Throughout the night, the wind gradually abated, and at sunrise brought fine weather, with a steady breeze at S. E. which continued throughout the day. The Bar. rising to 30.15.

This short account will enable you to compare the time and direction of the storm as it occurred at Madras, and I hope to add to the facts necessary to elucidate the theory of storms. It appears to me, that from the sudden changes and extreme violence of the wind, I must have been near its vortex at the time whence it gyrated towards your coast, as it certainly did not extend any distance to the Eastward. I have only further to add, that although I have twice encountered hurricanes in the West Indies, I do not think they surpassed the late storm in violence when at its height.

I sustained but little damage in my spars, but lost most of my sails, also a seaman, and one of my boats, which last was blown completely over the poop from the davits.

WM. LACY *Whitby*.

NOTE.—Subsequent to closing my letter, I find on reference to my Journal, that the Barometer fell to 27.45. at 8 A. M. October 23, which makes the fall of mercury 2 inches and 65-hundredths, a change I have rarely experienced even in high latitudes, in so short a period. This fact is further corroborated by the account of Surgeon Tait, who at my request took note of the changes.

The following letter I received when this Memoir was nearly ready for the press, giving an account of the foundering of the Ship WASHINGTON, Capt. Barnes, in consequence of injury sustained in the Storm. I am indebted for it to Messrs. GLASS and Co. of Calcutta.

(Copy.)

Messrs. Glass and Co.

On board Sir Robert Peel.

GENTLEMEN,—I deeply regret to have to inform you, that the *Washington* foundered in the Bay of Bengal on the 25th October, in long.

86° 14' E. lat. 13° 29' N. from the effects of a dreadful hurricane on the 22d from the Eastward, in which she was dismasted. We were received on board the *Sir Robert Peel* of Aberdeen, David Craig, Master, from Calcutta, bound to London, on the 25th, but six of the crew were received on board the *Lord Glenelg* on the 1st November. About one-half of the sugar was pumped up before we left her, and the rest all damaged, as well as the hides and turmeric. We had only time to save part of the stores and clothes. I lost the most of mine, and what was saved, are damaged with salt water. Although we saw next morning after the disaster, a vessel of 6 or 700 tons with only the fore-mast standing, I do not think it was of great extent, at least in a Northerly direction, as the *Robert Peel* had fine weather on the 22d, with a heavy swell, by which she carried away her fore-top-mast and main topgallant-mast; at the time she was distant in a Northerly direction about 180 miles from us. Had the *Washington* continued tight, we might have got in with the land about Madras, the nearest port; but as every one had to take his share of pumping by day and night to keep her from sinking, none could be spared to rig jury-masts, and get the sails bent; in fact every one was almost worn out before we got on board the *Sir Robert Peel*.

I close this to say, that we arrived here yesterday, and sail to-day, and hoping this will find you well.

St. Helena, Jan. 4, 1842.

D. BARNES.

Log of the Brig ANN METCALFE, J. Errington, Commander, reduced to civil time. Forwarded by Capt. Biden.

22d October.—Saturday, noon, commences with moderate breeze from the N. E. with thick hazy weather, and occasional showers of rain. Barometer 29.70. At 4 P. M. increasing breeze with continued small rain. Barometer 29.60. At 8 P. M. wind still increasing, with a strong sea from the Northward. Barometer 29.40. Midnight very thick with constant rain, both wind and sea increasing fast from the Northward. Barometer 29.20. Thermometer 75°.

23d October.—Sunday, at 4 A. M. wind increased to a gale from the Northward, with a tremendous sea; at 8 A. M. it blew a complete hurricane from the Northward, the sea running very high. Bar. 28.70.

Noon, wind lulled for the space of half an hour, and shifted to the South, and blew a hurricane from that quarter also, which caused the sea to run up in the shape of a cone, making it very dangerous for a ship to live in. Lat. account $12^{\circ} 0'$ North, longitude $85^{\circ} 30'$ East. At 4 p. m. wind still at South, with a tremendous heavy sea, ship laying to, under bare poles, as no canvas would stand to it. Barometer 28.50. At 8 p. m. a little more moderate, but sea still very high. Barometer upon the rise 28.80.

Midnight cloudy, but more moderate, and sea falling; made sail to trysail and foresail. Barometer still rising and 29.00.

24th October.—Monday at 4 a. m. wind from the S. S. E. still moderating, and sea going down. Barometer 29.20.

At 8 a. m. wind still from the S. S. E. and moderating fast, sky beginning to break through the clouds. Barometer 29.50.

Noon, moderate and fine, clear sky, with sea decreasing, wind at S. E. latitude observed $12^{\circ} 6'$ N. longitude Chron. $84^{\circ} 30'$ E.; ship arrived at Madras on the 29th October.

JOHN ERRINGTON,

Commander.

Abridged Log of the Ship LONDON, from Madras to Moulmein, reduced to civil time. Forwarded by Capt. Bulen

22d October.—p. m. to midnight, fresh breeze from N. E., and increasing with squalls. Ship standing to the E. S. E. about 22 miles in the 12 hours. Bar. 29.75.

23d October.—a. m. strong breeze N. E. increasing with squalls, and heavy head sea. At 6, wind N. N. E. At 8, increasing gale with heavy gusts, close reefed topsails. Bar. 29.80. Ther. 81° . Noon, strong gale, frequent violent squalls and heavy sea. Bar. 29.70. Lat. by account $12^{\circ} 56'$ N. long. $83^{\circ} 55'$ E. p. m. wind N. E. increasing; frequent heavy squalls, lying to with head to the S. E. 4 p. m. Bar. 29.70. 8 p. m. wind E. N. E. Midnight heavy gale with frequent violent squalls.

24th October.—1 a. m. Bar. 29.50. At 2, wind marked S. E. with the same. At 6, wore to the N. E. Noon Bar. 29.70. to 29.50.*

* So in the MSS. I do not find it mentioned that there were two, and the Bar. cannot I think have varied so much in the squalls. I suppose the meaning to be, that between midnight and noon the Bar. had risen from 29.50. to 29.70.

Ther. 81° ; fresh gales, but made some sail. Lat. by indifferent observation $12^{\circ} 34'$ N. long. $83^{\circ} 44'$ E. P. M. wind E. S. E. strong breeze. At 8 P. M. more moderate. Midnight fine. Bar. 29.50.

25th October.—Fine wind S. E. Lat. $13^{\circ} 20'$ N. long. $84^{\circ} 70'$ E. Bar. 30.05. Ther. 82° or 84° .

Abridged Log of the Barque SARAH, Capt. Walker, reduced to civil time. Forwarded by Capt. Biden.

The *Sarah* by her log worked back from noon of the 24th, appears to have been at noon 22d October in about lat. $14^{\circ} 52'$ N. long. $83^{\circ} 24'$ E. At 1 P. M. of which day a steady breeze from N. E. sprung up, increasing to a fresh breeze with cloudy weather, and a heavy sea at midnight; wind N. E.

23d October.—Daylight increasing N. E. wind, with a turbulent sea. Noon, Bar. 29.73. Lat. account $14^{\circ} 07'$, long. account $84^{\circ} 24'$ E. Squalls increasing in rapidity and violence, till a little after noon she hove to. P. M. wind N. N. E., blowing a gale. 6 P. M. N. E. tremendous sea, vessel laboring greatly.

Barometer as follows; viz.

1	P. M.	..	..	..	..	29.70
2	„	..	..	..	....	29.65
3	„	..	..	..	..	29.62
4	„	..	..	..	....	29.56
6	„	..	..	..	..	29.60.

24th October.—A. M. wind veering from N. E. by E. to East. At 4 P. M. Bar. 29.63. At 7, 29.68. At 8, 29.73. At 8 A. M. moderated a little, and veered to E. by S. wore and scudded; wind East. Noon strong gales E. by S. Lat. observed $13^{\circ} 34'$ N. long. observed $83^{\circ} 53'$ East. At 2 A. M. passed a large ship, which had lost all her topmasts.

Abridged Log of the Barque STALKART, Capt. A. R. Dixon, from Colombo to Madras.

22d October.—At noon in lat. $12^{\circ} 10'$ N., long. account $80^{\circ} 33'$ E.* Fresh breeze N. by E. and cloudy, *high sea from the N. E.* At 4 P. M.

* This longitude and those of the 23d and 24th are obtained by working back the log from the 25th, on which day only the longitude is given.

and in the evening threatening, made preparations for bad weather, wind marked N. E. At 3 p. m. wind "variable" to midnight, though the course is constantly E. by S. ; midnight fine.

23d October.—2-30 hard squall ; 3. sea increasing ; lat. by Rigel in Orion $12^{\circ} 03'$ N. ; by 5 a. m. hard gales N. N. E. 7-10, very threatening weather, secured every thing. Noon squally, and high turbulent sea, sun obscured. Lat. by account $11^{\circ} 33'$ N. long. account $80^{\circ} 58'$. The wind Northerly, hard gales, every appearance of a hurricane. By 10 p. m. blowing a hurricane from N. N. W., sea rising in pyramids.

24th October.—4 a. m. wind veered to the Westward. At 6, marked West, blowing with great violence, sea making a clear breach over all, hove to with a tarpaulin in the mizen rigging. 10 a. m. wind W. S. W. Noon more moderate, sea not quite so agitated, thick and cloudy. No observation Lat by account $11^{\circ} 33'$, long. $81^{\circ} 31'$ E. p. m. strong gales South, squally unsettled weather. At 6, more moderate. At midnight pleasant breeze.

25th October.—4 a. m. lat. by moon and Sirius $12^{\circ} 13'$ North. At noon lat. $12^{\circ} 46'$ N. long. $80^{\circ} 55'$ E.

Abridged Log of the Bark FAVORITE, Capt. W. F. Wilkins, from Madras to Vizagapatam, reduced to civil time. Forwarded by Capt Biden

22d October.—Lat. at noon $12^{\circ} 12'$ N. long. $81^{\circ} 40'$ E. wind N. E. to 6 p. m. and N. by E. to midnight, squally at times with dark threatening weather.

23d October.—2 a. m. wind N. N. E. ; day-light to noon increasing to strong gales with dark threatening weather and every appearance of an increasing gale, for which all preparation was made ; wind from 8 a. m. to noon marked N. E. by N. No observation. Lat. account $11^{\circ} 49'$ long. account $83^{\circ} 35'$. 3h. strong gales N. by E. At 6 p. m. very heavy, a man washed overboard from the poop, hove to with head to the Eastward. At 10-15, vessel laid on her beam ends with the top-rims in the water, cut away the lower masts, and righted her with 4 feet water in the hold, ballast and cargo shifted, and deck torn up by the fall of the masts, pumps choked, and rudder gone.

24th October.—Day-light still blowing heavily from the S. E. (the wind is marked N. by E. at 1 P. M. of 23d, but afterwards, though the time of change is not marked, it is stated to be at S. S. E.) noon more moderate. No observation. Lat. account $11^{\circ} 53'$ long. $83^{\circ} 35'$ E. 7 P. M. wind S. E. by S. At 10, moderating.

25th October.—Employed making a temporary rudder. This log ends somewhat abruptly, it being only stated that both Chronometers were ruined by salt water. I presume that the other instruments were also rendered useless, and thus no observed latitude or run is given. The positions are thus estimated from the Lat. and Long. given on the 22d, and the subsequent logs.

The LORD ELPHINSTONE

The *Lord Elphinstone* which left this port on the 16th ultimo for Coringa, encountered a severe gale of wind on the 23d and 24th, in latitude $15^{\circ} 37'$ North and longitude $81^{\circ} 30'$ East, with a heavy sea running the whole time. The Barometer fell to 29.69, which is as low as it fell at this presidency (Madras.) The wind blew from N. N. W.* to East, at which quarter it terminated at 4 A. M. on the 25th. The good ship bore the gale well, having lost neither mast, spar, nor sail. She has since arrived at her destination.—*Madras Paper.*

The foregoing are the Logs of Vessels at sea in the Bay of Bengal.

I now give the information from Madras and the Coast, and then the Logs of the Vessels which put to sea from the Roads.

The following is an extract of a letter from Capt. Biden :—

Madras, January 3, 1843.

MY DEAR PIDDINGTON,—I had the pleasure to forward you by the *Enterprize* on the 28th ultimo, all the logs which I have collected since our gale of October 24th. I have been so much engaged, that I was prevented sending them sooner as I intended, and having so long delayed the transmission of these valuable records, I would not forego so favorable an opportunity as this per *Hindustan*. One advantage has been gained by the delay; viz. the possession of the *London's*

* NNE is probably meant here.—H. P.

and the *Sarah's* log Capt. Atwood of the *London*, encountered the gale on his passage from this port to Moulmein, and the *Whitby*, which vessel sailed hence with troops for Moulmein on the 16th of October, (the *London* sailed on the 18th,) experienced a perfect hurricane; her sails were blown to shreds, and she lost her quarter boat, bulwarks, and one man washed over board. The commander of the *Whitby* told Captain Atwood, that the wind flew round to the Southward, that his Barometer fell down to 28, and that his vessel was for sometime in a critical situation. He promised to send me a copy of his log, otherwise Capt. Atwood would have obtained minute information; but I am sorry to say, the *Whitby's* log has not reached me. I believe the *Whitby* was about 20 or 30 leagues east of the *London*. As she sailed two days before her, the description of weather the *Whitby* encountered, and her disasters, tally very much with what was experienced by the *Lady Feversham*, and I believe she was not far from the *Feversham* during the gale. I hope the information I have been enabled to gather together, will furnish you with such authentic statements of the extent, duration, and the character of the remarkable storm to which all the logs relate, as can well be collected. I am of opinion that Pondichery was the central position by land,* as it blew a complete hurricane there, and was by no means so violent at Negapatam. The log of the *Lady Clifford* details the weather at that southernmost point, and to the Westward of Madras there was no indication of a severe gale. Official and private reports forwarded with the logs shew, that the Barometer did not descend below 29.70, and a rise was visible about 4 p. m. The gale commenced here about 8 a. m. on the 24th, and then the Barometer was at 29.89. We had smart squalls the preceding night, and much rain, and except at intervals from 6 a. m. till about noon, the weather was thick and hazy, with much rain, however, only two vessels remained in the roads after eleven. The *Dauntless* slipped at noon, and the *Emerald* brig, having got down her yards, and riding heavily, cut away her masts at 3 p. m., the sea then making a fair breach over her, with two anchors ahead, from one of which she parted; she rode out the gale. It blew fresh, and at times in hard gusts. The wind was from North to N. by E. till noon, N. N. E. at 2 p. m. and veering from N. N. E. to E. N. E. till 6.

* The centre passed a little to the north of Pondichery.

At 4-30, the Barometer indicated a rise, when the wind shifted to E. by S. and E. S. E. At 7, the Barometer had risen nearly one-tenth. At 8, it was at 29.84, the wind then S. E. and at 10, the weather cleared up, the moon rose about 10-30, and from that time till midnight we had moderate breezes from S. E. to S. S. E. and fair weather. I kept an anxious look-out on the *Emerald*, saw a light on board of her occasionally, and at 1 A. M. being well satisfied that she was safe, I left my office. You will observe by the logs of the respective vessels which slipped from the roads, how critically several of them were situated; for instance, the *Repulse*, *General Kyd*, and the *Amelia Mulholland*. I attribute their perilous situation to the want of due attention to those precautions which are laid down in clause 10 of our revised Port Regulations, copy of which I forward you.

The vessels named in the margin,* were wrecked between Cove-long and the Seven Pagodas. The Barque *Highlander* lost her rudder, the *Arethusa* and *Ganges* were too light, and were thrown on their beam ends, and it may be said, they literally drove on shore; but I am of opinion that the ship *Frances Smith* might have gained a sufficient offing to insure her safety if sail had been set and carried when she stood to sea; but unfortunately her courses were not bent, which might have been reefed, and carried the whole of the gale, whereas she split her fore topsail about noon, and under a treble reefed main topsail and a trysail, she was little better than lying to, and drifted fast to the Southward. The first cast of the lead at 7 or $\frac{1}{2}$ past 7, shewed the imminent danger of her position, and the accompanying deposition of an able seaman, who was one amongst the number saved from this unfortunate vessel, will shew what followed.

(Signed) C. BIDEN.

The following are the official communications from the Observatory, forwarded by Capt. Biden.

24th October.—At 8 A. M. Bar. Wind N. N. W.
 „ 10 „ „ N. by W.
 „ Noon 29.78 „ „ N. to N. by E.
 „ 2 P. M. 29.72 „ „ N. N. E.

* *Frances Smith*, *Highlander*, *Ganges*, *Ten*, and *Arethusa*

24th October.—	6	P. M.	..	..	N. E.
„	7	Blowing hard,	..	E. N. E.	
„	8	„	..	E.	
„	9	29.84.	..	E. S. E.	
„	10	„	..	S. E.	

Observatory, 24th October, 2 P. M.

The Acting Astronomer has the honor to forward to the Master Attendant, the register of the Barometer at this office, in continuation from noon of this day to the present time. He would state for the further information of the Master Attendant, that the Sympiesometer has commenced falling rapidly, and that every indication announces an approaching gale.

	H.	M.		
Barometer at	0	30	..	29 7825.
„	1	0	..	29 7565.
„	1	30	..	29 7530.
„	2	0	..	29 7260.

Observatory, 24th October, 1842.

MY DEAR SIR,—I am happy to tell you, that the Barometer is steadily rising and Sympiesometer also. We have nothing to fear this evening. I think we must look out to-morrow Barometer at this moment 29.8495.

Yours, &c.

(Signed) HENRY TAYLOR

The Acting Astronomer has the honor to inform the Master Attendant, that the Barometer has had a decided tendency to rise from 4 o'clock this afternoon; the results are in continuation from the last report.

Meteorological Journal, from 2 P. M. to 9.

1842.	Time.	Barometer.	Wind.
24th October.—	2 0 P. M.	29.7260 ..	N. E.
„	2 30 „	7105 ..	N. N. E.
„	3 0 „	7100 ..	N. N. E.
„	3 30 „	7230 ..	N. E.

24th October.—	4 0	„	..	29·7045	..	N. E. by E.
„	4 30	„	..	·7185	..	E. N. E.
„	5 0	„	..	·7390	..	E. S. E.
„	5 30	„	..	·7565	..	E. by S.
„	6 0	„	..	·7565	..	E. by S.
„	6 30	„	..	·7760	..	S. E.
„	7 0	„	..	·7995	..	S. E.
„	7 30	„	..	·8225	..	S. E.
„	8 0	„	..	·8400	..	S. E.
„	8 30	„	..	·8495	..	S. E.
„	9 0	„	..	·8525	..	S. E.

The late results shew a tendency to continued rising in the Barometer, the Sympiesometer is also rising, so that in all probability the worst of the gale has appeared for this night; at all events upon Col. Reid's Theory, the return of the gale may be felt before to-morrow.* The Acting Astronomer has made arrangements for a register to be kept throughout the night.

*Abridged Report of Logs of vessels in Madras Roads, forwarded by
Capt. Biden.*

Brig COLUMBINE, Capt. Crisp, Madras Roads.

24th October, 1842.—P. M. strong gales, and a heavy sea running from the N. E., by midnight heavy squalls with rain. Wind N. E. At 4 A. M. ditto weather. At 7 A. M. close reefed the top sails, and double reefed the main trysail, and cleared the decks for sea. At 8 A. M. ditto weather. At 9-30 A. M. tremendous heavy squalls with rain, and having every appearance of a gale, slipped the chain at the 75th fathom shackle, and stood out to sea under the close reefed topsails and fore-top-mast staysail; most of the other vessels in the roads having slipped likewise. Wind N. E. At noon ditto weather with a heavy sea, the ship labouring much, and shipping a quantity of water on deck.

P. M. Commences with hard gales, and a heavy sea with tremendous squalls. At 2 P. M. wind E. N. E. At 4 P. M. wind East. At 8-30 P. M. the wind having gradually veered round to the

* So in MSS.

S. E. wore ship to the N. E. in 18 fathoms water, saw a blue light burning to the S. W. Midnight more moderate.

25th October.—At 4 A. M. made some sail, and stood in for the land. Noon light winds and passing showers. Latitude observations $12^{\circ} 37'$ North ; after this time fine weather.

Report of the Barque SYMMETRY, Capt. F. D. Butler.

24th October.—At 9 A. M. blowing a heavy gale at N. by W., I slipped from my anchor and steered an East course until 2 P. M. wind continuing at North, and N. N. W. At 3 P. M. the wind shifted to N. E. blowing at times a perfect hurricane, altered course to S. E. A high sea running, ship laboring much. At 5 P. M. the wind in a heavy gust came from the East, and continued its violence, until 6.15 P. M., when it gradually abated, and drew to the S. E., continued on the starboard tack until 7.30 P. M. Wore ship then in sixteen and a half fathoms of water, and made more sail, rain descending in torrents. At 9 P. M. the wind veering more Southwardly, stood East until 6 A. M. then fine weather. Longitude by Chronometer $62^{\circ} 42'$ E. latitude $12^{\circ} 42'$. Wind South, experiencing a current of $3\frac{1}{2}$ to 4 mile per hour to the Southward, and from which date until my arrival in the Roads experienced fine weather.

Barometer 3 P. M. 29.60. and 29.10.

F. D. BUTLER,

Commander, Symmetry.

28th October, 1832.

Report of the Ship NEPTUNE.

24th October.—The gale commenced with rain and very thick weather. At 10 A. M. slept. At noon, gale increasing, obliged to furl the fore-sail, then under close reefed main topsail, blowing terrifically, head then about S. E., and by S. making no head way, and gradually breaking off. At 4 P. M. it cleared a little, found the *General Kyd* and a brig close to us ; At 6 P. M. ship's head off to S. S. W. wore ship immediately. At 9 P. M. saw the land astern supposed to be off Covelong ; it appeared very near us, I immediately made sail to get her off

the land, ship's head then about E. N. E. At 11 P. M. fortunately it moderated, and the ship came up to E. Midnight out of sight of land. Tuesday A. M. weather moderating and looking much fairer. At 1-30, made a little sail, at day-light moderate. Barometer and Sympiesometer standing 29.40, *it was no lower in the extreme of the gale*, continued to stand off E. and by N. At 8 A. M. fine weather. 9 A. M. atmosphere hazy, hot and sultry. At noon a light steady breeze from the Southward, found myself thirty-one miles E. of Madras, and seventeen miles to the Southward.

(Signed) W. F. KNIGHT,
Chief Officer, Ship Neptune.

Abstract of Log of the AMELIA MULHOLLAND.

23d October.—At noon the Barometer stood at 29.70, (never having been higher since lying here but one day, when it rose to 29.80,) the weather at this time bearing a threatening aspect, blowing a strong breeze from North; hauled all the cable on deck, veered to 82 fathoms, and saw all clear for slipping; the Bar. falling towards evening to 29.60, the wind increasing towards midnight with heavy squalls and rain to heavy swell setting in from the N. E., making the ship roll heavy.

24th October.—Commenced with strong winds and rain, with heavy puffs. At 5 A. M. the cable parted at 54 fathoms, the ship canting to the Eastward, made sail and stood out East. the wind increasing to a hard gale. At 10 A. M. the wind Eastering and the sea making fast, the ship laying off E. S. E. At 11, set the fore-top staysail to reach her off as much as possible. At noon it blew a hard gale with a tremendous sea, the Barometer down to 29.30, it having rained without intermission the whole morning.

Longitude 80° 38' East, latitude 12° 46' N. by account. At 1-30 P. M. it blew a hurricane, the ship lurching heavy, shifted the (shot and shell) ballast which gave her a tremendous list, making the ship quite unmanageable, carrying the helm hard a weather, the fore-topmast staysail split to pieces, and finding it impossible to take in the main trysail, sent the hands aloft, and cut it down from the gaff, bent another fore-topmast staysail, the gale moderating towards sun-set. The

Barometer inclining to rise. At 5 P. M. sounded in 28 fathoms, set the fore-top staysail to wear ship, but she would not pay off, sent the hands below to trim her, but the ship was labouring so heavy that very little was done. At 6-30, shoaling our water fast, set the reefed fore course, and tried to wear again, but this had no effect, sent the hands below again to trim over more shot. At 8, the gale having greatly moderated and the sea falling, set the double reefed fore-top-sail, but it had no effect, the ship still carrying the helm hard a weather; the water having shoaled to 15 fathoms, clewed up the head sails and brought up. At 9 P. M. in 10 fathoms veered cable to 60 fathoms and stowed sails, the gale moderating fast. Midnight moderate and cloudy; the Barometer having rose to 29.60, after which she had fine weather.

25th October.—Commenced moderate and fine, with a light breeze from the S. Eastward. At day-light found ourselves off the land about three or four miles, Sadras Hills bearing West.

Log of the Ship REPULSE.

The *Repulse* was lying in Madras roads, and at 8 A. M. slipped and put to sea, the wind marked N. N. E., course East. At 10, wind N. E. by E. Noon increasing. At 1 P. M. wind S. E. At 8 P. M. moderating, anchored in 19 fathoms. This ship's Barometer is marked as follows:—

At	8 A. M.	..	..	..	..	29.60
	10	„	..	.	..	29.29
	4 P. M.	..	..	..	..	29.27
	6	„	..	..	..	29.29
	8	„	..	..	..	29.35
	10	„	.	..	..	29.38
	12	„	..	..	..	29.50

When the weather cleared up the centre of the Sadras hills bore N. W. by N.; she returned safely to Madras.

Log of the Ship PRINCESS ROYAL, Capt. C. J. Lorck.

The *Princess Royal* slipped and put to sea at 9-30 A. M. with a gale at N. $\frac{1}{2}$ E. at 6 A. M. and North varying to the Eastward in squalls when she slipped. She stood out to the Eastward of course, and at

Noon had the wind N. N. E. gradually hauling round to E. by S. At 5. p. m. varying to the South in the squalls to S. E. At 6½ Barometer marked at 29.40. This ship did not anchor, and returned safely to Madras.

Ship LADY CLIFFORD. Capt. Miller.

The *Lady Clifford* was at anchor off Nagore in latitude, 10° 48' N. and Capt. Miller, says in a letter to Capt. Biden :—

“ By the accompanying extract from the log book of my vessel you will perceive, that the late gale, as far as it came under my observation, had all the characteristics of a circular storm, and that I skirted the South and S. E. range of it, at least I acted upon that supposition, and the result serves to confirm the opinion. It is probable, that I escaped much of its violence by not approaching too near to the centre of the storm, which I imagine must have been to the Northward of my position, and had I been bound to the Southward, I might possibly have avoided it altogether by steering to the S. W. instead of the N. E.

“ If these great storms are regulated by a fixed law, the knowledge of it might be of infinite advantage to seamen, by enabling us to make the best of them, instead of being perplexed by the sudden changes and other phenomena, so much against the good management of a ship during their violence.”

I have inserted the log of this vessel without abridgement, as shewing how judiciously Captain Miller profited by his knowledge of the Law of Storms.

Extract of the Log Book of the LADY CLIFFORD.

23d October.—At anchor at Nagore. During this day it blew a fresh gale at North, the sky clear, and weather fine. Barometer 30.05. Towards evening a thick cloud or bank gathered in the N. E., and a long swell set in from that quarter. At 10 p. m. the whole sky was overcast, and the Barometer began to fall. At midnight the wind decreased, and drew round to the N. W. the swell from the N. E. still increasing, sky overcast, but not looking bad. Barometer 29.90.

H.	K.	Course.	Wind.	Bar.
1	...	...
2	...	...
3	...	...		29.65
4	...	...
5	...	...
6	...	...		29.85
7	...	...
8	3	N. N. E.	W N.W	
9	4	N E by N		
10	5	...		
11	6	N E		
12	7	...	W S.W.	30.00
1	8	...		
2	8	...	S. W.	
3	7	...	S. W.	
4	7	...		
5	7	N.E by N		
6	7	...	S. S. W.	
7	7	N. N. E.		
8	7	...	South	
9	7	...		29.80
10	7	...	S S. E.	
11	7	...		
12	7	...	S. E.	29.90

24th October.—A. M. light wind from the land, sky overcast but fine. Barometer falling. Day-light same weather, cloudy but fair appearance, excepting the thick banks in the N. E. which grew longer and darker, and the N. E. swell still increased; not liking the appearance of the weather, weighed at 7 A. M. and stood to sea. Barometer began to rise, wind freshening at Westward. At 10, wind increasing to a gale, reefed the sails, and made the ship snug, pitched away the jib-boom, split main sail and carried away main topmast-stay. Noon it blew a whole gale, W. S. W. and a drizzling rain commenced, weather looking stormy, but Barometer still high.

4 P. M. gale very severe, could just steer before it with difficulty under close reefed topsails, sheeted *half home*, courses furled, top-gallant masts on deck. 6 P. M. the rain ceased, the sky broke into clouds, and Barometer began to rise. At 8, less wind, sky clearing. Midnight wind abating fast, out close reefs and set foresail, weather looking fine.

25th October.—Day-light fine weather, made all sail, &c. At noon in latitude 11° 9' N. longitude 80° 20' E. At Madras, latitude 12° 20' N. longitude 80° 55' E. Anchored in Madras Roads, at 6 P. M. on the 26th.

Abridged Report of the Ship GENERAL KYD. Forwarded by Captain Buden.

24th October.—At 8-30 A. M. blowing fresh from the Northward with heavy swell rolling in, and the Barometer being at 29.60, deemed it advisable to slip and stand out to sea. 9 A. M. slipped and stood to the Eastward under double reefed topsails. 9-45 breeze increasing fast. Barometer 29.54, close reefed topsails, wind N. Eastward, ship stands S. E. by E. Sails blowing to pieces, ship lying over much; lee gangway under water; stove in all the butts of water on lee side, and hove spare staves and cotton off orlop deck, into the hold. Barometer 29.49. Soon finding the gale increasing fast, tried to heave

the lee carronades overboard, but could not succeed. 12-30, in a tremendous squall, washed lee cutter away, battened hatches down. Water nearly up to main hatch coombings. Barometer 29.44. Sea terrific at 2 p. m. and ship drifting bodily to leeward; at 4 sounded 25 fathoms; attempted again to bend main-topsail without success, but bent the third stay-sail; wind E. S. E. ship heading S. by W. At 5 p. m. gale tremendous, and ship off to S. S. W. water 17 fathoms. Finding that we were drifting fast on shore, called hands aft, and stated that the only chance we had of our lives was to wear ship, at the same time telling them, that it would be no use doing so unless we got the main-topsail on her; the men with one consent said they would do their utmost, and with God's mercy we brought the sail to the yard after wearing ship. At 5-30 by 11 o'clock, the same night the least water at this time 15 fathoms; at 12 o'clock gale moderated and depth of water 18 fathoms; at 1 o'clock, 19 fathoms; at 2 o'clock, 20 fathoms; at day-light fresh breeze at S. Eastward, stood to the Northward out all reefs, and set courses. The Barometer 12 o'clock was 29.43; saw the land about Sadras.

THOMAS T. FEAD, *Chief Officer,*
Ship General Kyd.

Abridged Log of the American Ship FRANKLIN, Captain Richard,
reduced to civil time. From Captain Biden.

24th October.—The *Franklin* slipped and put to sea at 8 a. m., the wind at 9 a. m. marked N. by W. At 2 p. m. N. E., heavy gale throughout. At 7 p. m. wind E S. E. and at 11 E. S. E.

25th October.—At 2 a. m. wind S. S. E. and moderating to noon, when latitude 12° 13' N. out of sight of land; she arrived safe in Madras roads with very little damage.

Abridged Log of the Ship DAUNTLESS, reduced to civil time. From
Captain Biden.

24th October.—Lying in Madras roads. At noon heavy gale veering from N. to N. N. E. with thick hazy weather. Slipped and stood to sea. Thermometer 80°. Barometer 29.40. p. m. wind

N. N. E., N. E., and East, at 4 p. m. in a tremendous heavy squall with rain. Thermometer 78. Barometer 29.30. At 6 wind, S. E. by S. $\frac{1}{2}$ S. veering to S. E. At 10, S. E. strong gale. At midnight decreasing. Barometer 29.40.

25th October.—Moderating from midnight. At noon latitude $13^{\circ} 00'$ N. longitude $80^{\circ} 30'$ East. Thermometer 84. Barometer 29.50. She returned safely to Madras Roads.

Abridged Log of the Barque MERMAID, reduced to civil time. From Captain Biden.

24th October.—Slipped and put to sea at 7 a. m. Wind at 7 North; at 8 N. N. E.; at noon N. E. by N; at 6 p. m. E. by N. veering S. E.; and Southerly by midnight, when clearing up. Barometer from 29.80; at 1 a. m. to 29.50; from 8 a. m. to 5 p. m. and 29.75 at midnight again.

Brig ARETHUSA.

From the declaration of the Chief Officer, forwarded by Captain Biden, it appears that she put to sea at 9 a. m. standing to the E. S. E. for 6 hours, when the wind “shifted suddenly in a heavy squall to the Eastward,” throwing the vessel on her beam-ends. The masts were cut away, and the vessel anchored in 7 fathoms, but the surf carried her on shore, when she was wrecked.

The FRANCES SMITH and Brig RUBY.

The *Frances Smith* put to sea, but appears either to have been too crank, or leewardly, or not to have carried sufficient sail to obtain an offing, and she was driven on shore and wrecked. The brig *Ruby*, a coasting craft, was also wrecked to the Northward of Madras.

From Pondicherry

Captain Biden forwards me from this port several reports from residents, which I have printed below, and an official declaration before Captain Hostein, the Master Attendant of that port, relative to the loss of the *Antoinette*, Captain Prudhomme, and other vessels.

Reports from Pondicherry.

24th October.—The day the gale took place, the Barometer which had fallen on the previous day, rose at 8 o'clock to 28 inches and 2 lines. F (or 30.05 Eng.) At $\frac{1}{2}$ past 9 o'clock, it began again to fall gradually until noon, when it was at 28 inches, 0 lines, and 8 points (or 29.90 Eng). It continued to fall, and at 2 o'clock, at which hour a signal was made for vessels to get ready to put to sea, the Barometer was at 27 inches and 10 lines; (29.80 E) still falling, at 3 o'clock the wind was very strong, the sudden gusts becoming very fierce; the Barometer having somewhat further fallen. At a $\frac{1}{4}$ before 4 o'clock, the gale was blowing from N. E. to W. until 20 minutes past 5 o'clock. The Barometer was then at 27 inches and 2 lines, (29.15) when suddenly the wind became lulled until 6 o'clock, but afterwards it blew fresh from the S. W. During the calm, the Barometer fell below *storm*, but rose again in the evening.

Second Report.

24th October.—The Barometer had fallen to 26 inches and 10 lines, (28.65 E) two lines below *storm*, and remained thus from 20 minutes past 5 o'clock until 6, when the wind began again to blow strong from the S. W.

On the 2d instant, the Barometer was at 28 inches and 3 lines (30.1 E).

During the gale, the Barometer fell half an inch below what it did in the gale of 1830, and was stronger than any I remember in these parts.

It is to be remarked, that from 2 to 5 o'clock in the afternoon, at the most violent part of the storm, *the oscillations of the mercury* in the Barometer were so apparent, that it rose and fell instantaneously 2 to 3 lines, as though somebody had shaken the Barometer.*

It appears from the reports received, that the storm reached to the W. to the distance of 75 miles, consequently from 70 to 80 leagues from W. to E., for Captain Thevenard was not at the limit of the storm when he felt it, at 40 leagues to the East.

From S. to N. the storm does not appear to have made so large a zone, as it was not felt further than Porto Novo.† ●

* Italics are mine.

† This is an error, as it was distinctly felt at Nagore, a degree farther South.—H. P.

This gale in its course, was contrary to what it is generally; the wind blows from the N. W., flies round to the N. E. in passing by the N., and then to the E. and the S. This time the wind flew to the S. and S. E. in passing by the S. W. and it remained many days from the S. not strong, but the drops of rain were very large.*

Certificate from the Master Attendant of Pondicherry.

"I, the undersigned do declare and certify, that the English bark *Antoinette*, Captain Prudhomme, arriving from Cochin and Tranquebar with a part of her cargo on board, anchored in the roads of Pondicherry on the 2d of October last."

On the 23d of the same month, in the afternoon, the Captain was on shore, and the weather having assumed a bad appearance, the surf became so high that communications with the roads were interrupted. *On the morning of the 24th the Barometer had risen*,† and we thought that the weather had settled; nevertheless the surf was always very high, and Masula boats could not go through it.

There were in the roads, the English barques *Antoinette* and *Appollon*, the English brig *Cervantes*, the French brig *Le Mirabeau*, and the Dutch barque *Corsair*.

At 10 A. M. the Barometer began to fall, the wind was blowing moderately by squalls from N. W. to W. N. W. It was raining in the squalls. At noon the wind blew harder, the Barometer always falling. At half-past 12 o'clock the Dutch barque *Corsair* which was to windward of the *Antoinette*, dragged her anchor, and seemed to fall athwart the hawse of the *Antoinette*. The rain which was then falling in great abundance, though the wind was not very strong, hindered us from seeing both ships, which after having appeared a moment together, separated themselves, and the *Corsair* had anchored on the larboard side of the *Antoinette* at a small distance. At 2 P. M. I made signals to the ships to get under weigh immediately. The sea was very high in the roads, and the ships pitched a great deal at anchor. From

* This, it will be seen, depends upon the storm passing to the North or South of the observer, as also upon its track.

† Italics are mine.—H. P.

half-past 1 o'clock P. M., it rained so heavily, that not a single ship could be seen, the wind was always from the same direction, and blew by squalls very strongly. The Barometer was always falling. At 4 o'clock P. M. a most violent hurricane had set in, the flagstaff and the trees which were in the streets of the town were broken and torn up by the whirlwind. At 20 minutes past 5 P. M., the wind from the N. W. to W. N. W. ceased on a sudden, and after a moment of calm, the hurricane began with a new violence from the S. W. to the South.

When the wind came round to the S. E. it began to abate, it was then 9 o'clock P. M., and during the night the wind became very moderate.

On the morning of the 25th, the weather became pretty fair and the sea was not high; the Brig *Cervantes* was recognized anchored six miles to the N. E. of Pondicherry, having only her lower masts standing; the Captain went immediately on board, and when he returned, he told me that his Chief Officer gave him the following report: The *Corsair* in dragging her anchor ran foul of the *Antoinette*, and carried away her bowsprit, and a little while after both of her top-masts went. Afterwards when both ships had separated, the *Antoinette* ran foul of the *Corsair*. Both ships seemed much to injure each other, for the sea was very high.

Of the five ships above named, two only came back into the roads, the *Cervantes*, and the *Mirabeau* which appeared on the morning of the 26th, having lost her main-mast, which the Chief Mate has been forced to cut away in order to lighten the ship, which was on her beam ends.

Having learnt that pieces of wreck had come ashore at about 12 miles to the North of Pondicherry, I informed the Captains of the five ships of it. Captain Prudhomme having gone to the place where these wrecks were lying, recognized amongst them several pieces belonging to the *Antoinette*.

These numerous wrecks, which confirm the report made by the Chief Mate and crew of the *Cervantes*, leave no doubt of the loss of the *Antoinette*, which had on board the Chief Mate and a crew of 24 men; as well as her cargo, which was almost complete. The lower part of the mizen-mast of the *Corsair* having come ashore, we must

suppose that those ships have foundered in consequence of the injuries received when fouling each other. Since the hurricane, the breeze has constantly ranged at first from the S. E. and afterwards from the N. E., which would have brought them into the roads if they had been afloat. The hurricane of the 24th October extended itself to a great distance from Pondicherry, and on the same day ships have been dismasted at 200 miles to the east of Pondicherry, while five ships from Madras roads came on shore in the neighbourhood of that port.

(Signed) A. HOSTEIN,

Pondicherry, 1st December, 1842.

Master Attendant.

(A true Copy.)

(Signed) A. PRUDHOMME.

Storm at Pondicherry.

We are indebted to a correspondent at Pondicherry for a detailed notice of the storm of the 24th ultimo, as experienced in the vicinity of that town, from which we extract the following particulars: On the 23d the Barometer at 6 A. M. stood at 30 inches, but its fall during the day indicated an approaching storm. At 6 P. M. the sea was very rough, and during the night the waves rose to a great height. At 7 on the morning of the 24th, the raging of the sea was terrible. The sky was overcast with heavy clouds, especially in the North-East and North-West. At 8 A. M. the Barometer had fallen to about 29 inches, apparently indicating a hurricane. The surf was extremely violent, the waves breaking over the vessels, and at 8½ heavy rain commenced falling, and the wind set in from the North-West, both gradually increasing in violence as the day proceeded. The Barometer continued falling till 6 in the evening, the wind varying from North-West to South-West; about this hour there was a short period of calm, when the wind suddenly shifted round to the South and South-East, blowing from this quarter with as much fury as it had previously done from the opposite one. At 9 P. M. the wind moderated, and it gradually became calm. From 10 A. M. to 9 P. M., the rain fell in torrents, without ceasing. At the moment that the storm suddenly shifted to the South and South-East, the Barometer had attained its lowest

point of depression, the mercury having fallen to 28 inches, or "stormy," being half an inch lower than it has been observed since the storm of 1830. It was at 8½ P. M. that the mercury began to rise again.

In the morning, the following vessels were in the Roads: *Cervantes*, *L'Appollon*, *L'Antoinette*, *Le Mirabeau*, and *Le Corsair*. They put out to sea at 2 P. M. on cannon being fired as signals from the port. The *Mirabeau* and *Cervantes* returned with loss of masts and other damage, but the *Appollon*, *Antoinette*, and *Corsair* had not made their appearance, and great fears were entertained for their safety. The ship *Nouveau Tropique*, which had left two days previous for Madras, regained the Pondicherry Roads with much damage. The officers of the vessels which returned, reported that they had never witnessed so severe a storm; its ravages are described as extending inland for 18 or 20 leagues; in Pondicherry itself many houses were damaged, and two lofty chimneys of the manufactory of Messrs. Fontain and Co., 100 feet in height, were thrown down by the storm.

Coupling the above interesting particulars of our Pondicherry correspondent with the appearance of the storm here, where it was much less violent, and at Cuddalore, where a former correspondent seems to have conjectured very rightly, they had "but the tail of it;" the probable loss at sea of *three* vessels off Pondicherry, and the known wrecks of *five* near Sadras, with other casualties to the South, we are much inclined to arrive at the conclusion that the storm of the 24th ultimo was a true rotatory hurricane, whose centre or vortex was somewhere out at sea, between the latitudes of Pondicherry and Sadras—a conclusion to which we invite the attention of our scientific readers. We may add, that at Madras the wind at 10 A. M. was North and continued in this quarter till 2 or 3 P. M. At 4 P. M. it was N. E. by E. At 8 P. M. had moderated considerably. At 10 P. M. had shifted round to the South-East, and during the night became calm.—*Madras Spectator*, Nov. 5.

The Madras *Athenæum* furnishes the following further particulars of the late gale:—

"The following statement from the Master Attendant, details further mischief occasioned by the recent gale.

Intelligence from Porto Novo.

" 24th October.—Brig *George* came ashore, fresh gales from the N. W.; 6 p. m. shifted to S. W.; midnight wind due South, much moderated; 3 a. m. 25th, fresh Southerly and S. W. breeze, with occasional heavy gusts."

Having addressed Captain Campbell, Assistant Surveyor General, Southern India, to request that he would assist me in procuring such information as he could obtain to assist in tracing the storm inland, he has obligingly sent me in addition to his official report, those mentioned in the following extracts from his private letter :—

Ryacottah, 8th March, 1843.

" Ryacottah is in latitude $12^{\circ} 31' 20''$ N. longitude $78^{\circ} 4' 44''$ E. and by elevation is about 3145 feet above the sea, as deduced from the data of Col. Lambton's Survey.

I send you a set of observations with the Barometer made at Bangalore by Mr. Garrett, with the same instrument as before, he only remarks on the 25th, " Rain and tremendous wind at night." These observations with both instruments are merely corrected for the peculiarities of the instruments.

The former observations were reduced to 32° , for an expansion of 0.018018 feet* for each inch of mercury, and for 180° of temperature according to Dulong and Petit.

I enclose also some observations made by Lieut. Robertson, Superintendent of Roads near Patcheeroopum in the Amboor valley, which place you will find in the 78th sheet of the Indian Atlas, to be about 34 miles S. by W. of Vellore.

I conceive the reason of the strength of the storm not being felt there arises from some high precipitous hills which shelter the plain of observation.* The instrument is a very fine one, but I do not know if it has been compared.

10th March.—I have this morning received from Capt. J. Green, the Superintending Engineer at Bangalore, a splendid draft of the storm, taken with Newmann's self-registring machine. You will see that

* I have no doubt this was the true reason, and that it might, as in the case of Gyah and Pooah, in my Seventh Memoir, Vol. XI, Jan. 8, have been *seen* overhead.—H. P.

there, as here, it began at North, but shifted to the West, in which direction and S. W. it was at its height from 12 to 2 of the night of the 24th. The pressure is I suppose pounds on a square foot. The wind then came back to North again at 10 A. M. of the 25th, and then to South suddenly at a quarter before 1 of the 25th, and at 5 P. M. shifted to East.

October.	Bangalore.		Ryacottah.	Difference.
12	27.231		27.219	— .012
13	27.215		27.183	— .032
14	— .223		— .191	— .032
15	— .178		— .153	— .025
16	— .180		— .137	— .043
17	— .176		— .139	— .037
18	— .133		.....	.....
19	— .137	At 10 A. M.	27.119	— .018
20	— .149		.....	.....
21	27.160		27.099	— .061
22	— .166		— .101	— .065
23	— .162		— .087	— .075
24	— .119		— .035	— .084
25	26.972		26.961	— .021
26	27.033		27.029	— .004
27	— .052		.....	.....
28	— .158		27.059	— .099
29	— .125		— .119	— .006
30	— .127		— .129	— .002
31	— .125		— .109	— .016
24th—4m.				
	26.972		26.939	— .033

The following Report has been kindly forwarded to me by the Magistrate of Mangalore.

Your letter of the 16th April, addressed to the Magistrate of Honore, reached me a short time ago. I have now the pleasure to send you some notes of the weather, from the 24th to the 27th October, 1842, kept in my office. The direction of the wind is probably not exactly correct, as there is no vane at the station.

The appearance of the sky was very disturbed on the 25th and 26th, and I felt certain, that a severe gale of wind must have been blowing on the opposite side of the Peninsula.

Notes of the Weather at Mangalore in October, 1842.

24th.—Heavy rain

25th.—Light showers with strong gusts } Thermometer maximum
of wind from the N. W. } 75°.

26th.—Cloudy, light showers, strong southerly winds.

27th.—Ditto ditto.

HENRY BLAIR,
Magistrate.

Abridged Report from the French settlement of Mahé.

Desirous of obtaining information from every possible point along the coast, I addressed M. Bourgoïn, the Governor of the French settlement of Mahé, requesting he would kindly collect for me all that could be gleaned there. The substance of his letter in reply is, that there were no regular observations registered by any person at that settlement, nor at Karical; but that towards the close of October 1842, no person recollects any particular bad weather, or such signs of it as might have indicated that a storm was raging elsewhere, and this is corroborated by those, who from time to time keep detached notes of remarkable changes. At Mahé, between the 23rd and 27th October 1842, nothing of note occurred in the appearance of the weather, or of the sea at Karical. The rains began on the 22nd October, but without any wind worth noting: the surf only was rather high.

Observations from Patcheeroopum in the Amboor Valley, about 34 miles S. by W. of Vellore, or about Latitude 12° 22' N. Longitude 79° 6' E., and bearing from Madras about S. W. by W. 85 miles, by Lieutenant Robertson of the Madras Army. Forwarded by Captain Campbell, Assistant Surveyor General.

24th October.—8 A. M. Thermometer 73°. Barometer 28.798. Rain guage $\frac{27}{10}$ inches, wind N. E. with drizzling rain throughout the day. Squally at night.

	Ther.	Bar.	Rain Guage	Remarks.
25th Oct.— 7 A. M.	73°	28.876		Cloudy, wind moderate.
„ 12 A. M.	75°	28.912	$\frac{2}{10}$	Ditto ditto.
„ 3 A. M.	75½°	28.886		Ditto ditto.

	Ther.	Bar.	Rain Gauge.	Remarks.
26th Oct.—	7 A. M. 73°	28.936		Cloudy, with light wind.
„	10 A. M. 74°	28.944		Ditto ditto.
„	12 P. M. 77°	28.914		Ditto ditto.
„	3 P. M. 78°	28.904		Ditto ditto.
„	8½ P. M. 76°	28.914		Ditto ditto.

Official Report by Captain J. Campbell, Assistant Surveyor General.

1.—From the end of September, the Barometer was observed to have gradually risen daily, which in this situation generally indicates approaching rainy weather, and accordingly on the night of the 12th October, a fall of 2.4 inches of rain took place, the Barometer standing at 27.095 inches, having risen from 26.862 inches on the 28th September: both observations being made at 10 A. M.●

2.—From the 12th October, the Barometer gradually fell again until at 10 A. M. on the 23rd October it stood at 26.971 inches, when there was but little wind, clear blue sky and Cirri; but before noon, the wind had increased from N. E. bringing with it moist air which gradually condensed in Cirro Cumuli, and then Nimbi. In the evening the wind had lulled again, but in the night it again increased in strength; and at sunrise of the 24th, was blowing strong at N. E. with an overcast sky, but no signs of rain. At 10 A. M. the Barometer stood at 26.927 inch, with the wind falling again, and a little drizzling rain. At 4 P. M. the wind was high at North with drizzling rain. Barometer 26.820 inches. About 7 P. M. after dark, wind began to increase with rain from North; and between 8 and 9 o'clock, had become strong enough to blow in some cracked panes of glass in a window in an exposed situation. Observations of Barometers forgotten in the confusion of securing doors and windows for the evidently approaching gale.

3.—Early in the morning of the 25th October, the Barometer stood at

1½ A. M. 26.648 inches, gale at its height from the North. Tiles from the houses beginning to fly. Little rain, sky overcast. Thick in East and South; in North an uncommon light in horizon, as if shining under an arch in a canopy of mist about 2° in altitude above the horizon.

- 3½ A. M. 26.636 inches. Wind at East, many tiles blown off houses on North and East sides. Dark in North. The uncommon light in East. Thick in South and misty with rain.
- 6½ A. M. 26.740 inches, wind veered to S. E. lulling a little, rain heavy.
- 7 A. M. 26.778 inches.
- 7½ A. M. 26.788 inches.
- 8 A. M. 26.812 inches, wind at South, much fallen.
- 9 A. M. 26.832 inches, wind very much fallen, but still high, mist and drizzling rain, wind seemed veering Westerly.
- 9½ A. M. 26.854 inches, wind a strong breeze, mist, no rain.
- 10 A. M. 26.864, wind strong at S. E. fog and mist.
- 11 A. M. Fog risen and a little sunshine; air particularly clear, wind light.
- 4 P. M. 26.793, overcast sky, wind high, rain about in showers. Barometer observations discontinued. The minimum pressure observed by two instruments. The observations given are corrected and reduced to 32° Fahrenheit. Instruments the same as last report.
- 4.—On the 26th October, the Barometer stood 10 A. M. 26.932 inches, morning misty and wet, wind fallen rapidly, blowing as usual from N. E.
- 4 P. M. 26.839, Blue sky, Cumuli and Nimbi.
- 5.—After the 26th, the Barometer rose again as gradually as it fell. It must be remembered, that however easy it may be to the practiced seaman to note on the sea shore, or in flat country, the direction of the wind; yet among the vast granitic mountain masses of a country like this, it is by no means easy to tell with certainty, even within 3 points, from which quarter the wind is blowing: its direction being as often *up and down* as any other.

J. CAMPBELL,

Ryacottah, 9th January, 1843.

Asst. Surveyor General.

Captain Newbold of the M. N. I., Assistant Commissioner at Kurnool, has favoured me with observations from Bangalore, Bellary, and Hydrabad, and with some suggestions of his own, of which I shall avail myself at length in the Summary, which as usual, will follow the

detail of the observations. From the notes forwarded by Captain Newbold, it would seem that at Hyderabad, nothing of note was experienced. At Bellary, latitude about $15^{\circ} 6'$ N. longitude $77^{\circ} 5'$ E. the Barometer fell from the 23rd October to the 27th, from 28.65 to 28.55* (height of the station above Madras not given,) and by the 29th had risen again to 28.65. The weather cloudy at times, and the winds from N. to NE. and NW. to the 25th, and then for four days from the SE., but the weather quite fine. At Bangalore on the 25th October, a good deal of wind and rain, almost a storm, the direction not noted. This we have from Capt. Green's observation, as forwarded by Capt. Campbell, and mentioned in the extracts of his letter, page 366.

The following Notes are extracted from a second letter from Capt. Newbold, who has also obliged me with some views, which will be found at length in the Summary.

Since my last, answers have come to my queries from the Southward, decisive of the truth of my supposition of the current's having passed over the peninsula in an easterly direction, to the great gap of Coimbatore, thus bursting through the lofty ghaut barrier upon the Arabian Sea and islets immediately opposite. It was felt severely at Salem, $11^{\circ} 41'$ N. Lat. blowing from the N. E. right in the direction of the gap, and clearly proving the Southerly direction imparted to part of this Easterly blast by the contour of the hilly barrier.

At Madura, $9^{\circ} 57'$ N. Lat. or $1^{\circ} 44'$ South of Salem, the storm was not felt in the least, nor at Paumban $9^{\circ} 18'$ N. Lat. on the coast, where the weather on the 4th and 5th October rather finer than it had been. On the 5th, wind from S. W., fresh breeze with lightning from N. W. from 7 to 11 P. M., and wind from same quarter on the 6th October; wind a little stronger and from same quarter, and a little thunder and lightning at the same hour. On the 7th, the wind was light, thunder and lightning as before. No barometrical remarks made. Those of the Thermometer have nothing worthy of remark.

It is evident, therefore, that the storm did not extend so far South down the coast as Paumban, and from its not being felt at Madura, probably not so far as Point Calymere.

See in following page the observations from Bombay.

For the information condensed above, I am indebted to Mr. Fischer, and Messrs. Cadenhead of Salem, Dr. Gill of Madura, and Lieut. Robertson at Paumban.

From F. H. CROZIER, Esq. Sub-Collector, Malabar, I have received the following letter and report.

DEAR SIR,—With reference to your letter of the 16th date, I have the pleasure to enclose the remarks entered on the records of the Master Attendant's Office at Tellichery, and regret being unable to procure you more particular observation of the appearances and variation of the Barometer, &c. during the period you specify. I at the time alluded to, happened to be officially engaged, about 25 miles to the North of Tellichery on the coast, and immediately in the rear of Mount Dilly, a lofty hill, as you are aware, projecting into the sea, and forming almost the only safe anchorage and harbour during bad weather on this coast. I remarked at the time that it was *most unusually* filled with Pattamars, (the craft of the coast,) and was given to understand they sought refuge from the bad weather at sea and on the coast. The sky looked very stormy at the time, but I do not recollect any intimation of the vicinity of a gale further than being prevented myself, on the 29th of October, from crossing, as I am accustomed to do, the Bar at the entrance of the Caverry river close to Mount Dilly, by the extreme violence of the surf. I had crossed the Bar a few days earlier in the month. I was detained for two or three days after and before the 29th.

Yours obediently,

F. H. CROZIER,

Sub-Collector, Malabar.

Malabar, 6th May, 1843.

*Winds during the past Week.**Weather during the past Week.*

October 1812.		Tellicherry.
23rd	Light breezes, the Westward,	Fine during the day, towards evening squally over the land.
"	Light breezes variable, N. W. to S. W., and S. E. during the night, ..	Cloudy, with lightning at intervals.
24th	Light land and sea breezes,	Fine during the day, towards evening squally over the land.
"	Light breezes variable, N. W. to S. W., and S. E. during the night, ..	Cloudy, with thunder, lightning and slight showers at intervals.
25th	Moderate breezes, the Westward during the day, ..	Cloudy, with drizzling rain.
"	Strong breezes, the S. W. during the night	Cloudy, with lightning and slight showers at times.
26th	Strong breezes variable, S. E. to South during the day,	Cloudy, with slight rain.
"	Strong breezes, the S. W. during the night,	Cloudy, with drizzling rain.
27th	Fresh breezes, S. W. during the day, ..	Cloudy.
"	Fresh breezes, S. W. during the night, ..	Cloudy, with lightning and drizzling rain at intervals.
28th	Fresh breezes, S. W. during the day, ..	Cloudy.
"	Fresh breezes, S. W. during the night, ..	Cloudy.
29th	Light breezes, the Westward during the day, ..	Fine.
"	Light breezes variable, S. W. to W. during the night,	With passing clouds and lightning.

From the Bombay Times of 9th November.

THE MADRAS HURRICANE.—We gave in our last numerous extracts from the Madras papers of the 25th, in reference to the hurricane which occurred on the preceding day. On examining the meteorological records of the Observatory, we find that the first manifestation of this atmospheric disturbance prevailing in our neighbourhood—for here, unless in the heavy swell which extended to the harbour, we had no actual symptoms of storm till the evening of the 30th—became apparent on the 25th; we had then some lightning in the evening, with a rather troubled sky towards the eastern horizon, and the barometer fell about .030. This state of depression continued till the 29th, long before the thunder-storm and rain of the 31st, of which scarcely any prognostication was given, when the mercury had rallied to its usual level. The following note gives the means, the maxima and minima, and the range of a large standard barometer by Newman; the obser-

vations are corrected for temperature to 32 deg. F., and for capillary attraction:—

	October	24th	25th	26th	27th	28th	29th
Mean of 24 hours' observation, ..	29.720	.699	.613	.625	.665	.732	
Maxima,	29.810	.788	.712	.675	.722	.791	
Minima,	29.661	.620	.609	.573	.609	.691	
Range during 24 hours,		146	188	053	102	113	100

From this it will be seen that the day of greatest mean, as well as of greatest minimum, depression, was the 27th ;* the day of least range, when the ordinary bi-diurnal fluctuations of the barometer were most affected was the 26th, when the range was about half what it ought to have been, the interval betwixt the maximum and minimum being only .053. The Madras papers give the barometric readings, uncorrected, and do not note the temperature so as to enable us to apply the correction, whereby we should have been enabled to give an exact comparison of the fall of the instruments here when the influence of the storm reached us, but nothing more, as compared with that of the Madras barometers where it was raging round. It must be kept in mind that at 10, or rather at 9.45 A. M., the barometer is at its maximum, and at 4 P. M. it is at its minimum elevation, and that in the finest weather the range betwixt these two hours amounts to about .150. On the 24th ult. it stood at Madras, at the first named of these hours, at 29.873 ; and at the second, at 29.7054 : so that the total depression amounted to 1626, or to about one-hundredth of an inch over the average. The mean of 700 hourly observations during the month of September gives .094, as the average range at Bombay betwixt the hours of 10 A. M. and 4 P. M. ; the depression at the former of these corrected, as formerly stated, 29.676, that, at the latter, being 29.582. If these circumstances be overlooked, the barometer will appear to be on the rise or fall just as it happens to be examined, not more than five hours before or after 10 A. M. or P. M., the hours of maximum elevation. Were vessels, when in port, any where in the neighbourhood of a meteorological observatory, to have their barometers and sympiesometers corrected and rated by some recognized standard, it would greatly enhance their value as monitors of approaching storms, and enable meteorologists to avail themselves of the logs and records kept at sea, to an extent which at present it were vain to attempt.

* It will be noted also that this 26th and 27th was the day on which the *Lucy Wright's* storm was nearest to Bombay.—H. P.

The indications of scarcely any two barometers exactly agree; and betwixt the tropics, where the total range scarcely exceeds three-tenths of an inch, the most delicate movements of the mercury must be watched. In marine barometers, besides, the correction for the rise of the quicksilver in the cistern can very rarely be made with any approach to accuracy, and scarcely ever, in any two instruments, however similar, precisely corresponds. It depends upon the relation of the diameter of the tube to that of the cistern, the latter varying not only in different instruments, but in different portions of the same: this invariably makes the observed depression less than what it ought to be. It is still worse with the sympiesometer, whose indications of pressure are so complicated by high temperatures, that unless to those long familiarized with it, it is of little value between the tropics. These imperfections would in a great measure be remedied, were the observer in possession of a schedule of corrections which he could at any time apply. These considerations, if considered of value, might be tested here by the Indian Navy; and we have no doubt would be productive of important results. The instruments, indeed supplied by the Company, especially the thermometers, are often of such indifferent quality, that unless rated or corrected, they are comparatively of little use. Instead of lumbering about amongst arsenal and naval stores, they ought to be placed where they could be taken care of and kept in order; where their excellencies could be pointed out, and their imperfections remedied. It would appear incredible were it stated, that the efficiency of a very able and experienced engineer corps is in many cases neutralized by the wretched economy that refuses to supply instruments fitted for service! Yet we have been told of an extensive district under the supervision of a very able officer, where levelling and general surveying is constantly required, where there is not a level or theodolite fit for the common purposes of road-making; and where, in consequence, the services of highly-gifted and well-paid officers are impeded or thrown away for a consideration, which would not amount to a single week of the pay and allowances!

The Madras gale was encountered by the *Seaforth* Ceylon steamer off Cochin, at 10 P. M., on the 25th; it dismasted the *Lucy Wright*, near Mangalore, on the 26th;* the *Futtay Salam*, from Calcutta, was overtaken and nearly swamped by it, close to the Laccadive Islands;

* In the following extract it is said on the 27th.

the *Cleopatra* steamer encountered it on her way to 'Aden, and the *Semiramis* had a midshipman washed overboard when on her voyage from the Persian Gulf. We should feel greatly indebted to any officer whose vessel had been exposed to it, if he would favour us with an extract from his log, as to the time when, the place where, and circumstances under which the gale, or its symptoms, were experienced by him.

The Ship LUCY WRIGHT.

Letters have been received from Captain Pollock of the *Lucy Wright*, bound from Liverpool to this port, announcing that his ship, was totally dismasted on the 27th ultimo, in a hurricane in lat. 13° 2' N. and 71° 39' E.

The *Lucy Wright* was off Rutnagherry on the 4th instant, and the Captain mentions that her hull has escaped uninjured.

The hurricane appears to have occurred about the same time as that which has done so much damage at Madras, and as it attacked the *Lucy Wright* in the same latitude as Madras, it is not improbable that it was one and the same gale.—*Ibid.*

Extract from the Log Book of the ship HIGGINSON, nautical time from a Newspaper.

28th October.—Barometer fell at 6 A. M. from 29.40 to 28.50. Lat. 18° N. Long. 70° 20' E. "Very heavy gale from West to South with thunder, lightning and much rain, all sails furled, and ship hove to, continued so for six hours, when it began to abate."

Abridged Log of the ship FUTTAY SALAAM, from Mauritius to Bombay. Forwarded by G. BUIST, Esq. H. C. Astronomer at Bombay, reduced to civil time.

24th October.—Noon to midnight light breezes W. S. W. to W. N. W. and fine.

25th October.—From noon winds W. N. W. to N. W. and fine, three and four knot breeze, noon Lat. 7° 55' N. Long. Chron. 68° 14' E. P. M. moderate, 4 to 7 knot breeze, W. N. W. to N. W., increasing at midnight and "a chopping sea getting up," steering to the N. by E. through-out.

26th October.—Midnight to noon 6 to 7 knot breeze, with heavy N. W. swell, “ship plunging much at times.” Noon Lat. acct. $10^{\circ} 16'$ N. Long. $68^{\circ} 54'$ E. 8 M increasing fresh gales W. by N. At midnight S. W. going from 4 to 6 knots to the N. by E. At midnight a gale at S. W. making all snug, vessel making much water.

27th October.—The gale increasing to a hurricane at S. S. W at 4 A. M. when hove to. At 9 A. M. wind marked southerly. At 6 A. M. “blowing complete hurricane, ship perfectly unmanageable, lashed the helm a lee. Tarpaulins in the main and mizen rigging to keep the ship to.” Noon gale increasing with a very high sea, vessel straining much. Lat. by acct. $11^{\circ} 55'$ N. Long. $69^{\circ} 09'$ E. The ship lying to, wind marked S. E. blowing a furious hurricane with a tremendous high sea. At midnight gale, but more moderate.

28th October.—A. M. moderating, but still dirty with violent squalls and heavy rain. Daylight, (6 A. M.) moderating fast, at which time “bore up N. West to clear the Byramgore Shoal.” At noon Lat. acct. $13^{\circ} 31'$ N. Long. acct. $68^{\circ} 09'$ E. After which fine weather.

The logs end here somewhat abruptly; that is to say, they are not copied up to one having an observation for Lat. and Chron. which is always desirable, for by working the log both backwards and forwards the vessel's true place is better ascertained, and much light is thrown on the action of the currents generated by the storm.

From the Bombay Times.

We subjoin a very interesting notice from Dr. MALCOLMSON of the effects of the Madras hurricane of the 24th of October, for such we have no doubt that it was, off the Arabian coast, where it appears to have reached on the 30th:—

To the Editor of the Bombay Times.

SIR,—In your paper of the 30th ultimo, you requested communications in reference to the late Madras Hurricane, which appears to have swept over a large space, and to have been very destructive in its progress.

Since the publication of Colonel Reid's work on the Law of Storms, the subject has attracted, much attention both in a philosophical,

maritime, and practical point of view. Agreeing with the Colonel, that much good would result from the rotatory motion of Gales being understood and acted on by commanders of vessels, when caught in tempests, with this object in view, every authenticated fact that bears on the subject should be carefully collected for future deductions. On this account, I send you a few particulars of the gale or hurricane the ship *Seaton* experienced on her passage from Aden towards Bombay, in which she was dismasted, narrowly escaped foundering, and regained the port with great difficulty under jury masts, leaky, and her hull so much injured, that she has been condemned by survey.

After leaving Aden, the *Seaton* had moderate breezes from the Northward, with clear weather; for two or three days before the gale was felt, they had a very uneasy, broken and turbulent head sea, with light northerly winds, which enabled them to carry royals and main sky sail.

On Sunday the 30th of Oct. P. M., the breeze gradually increased so much, as to require the smaller sails to be stowed, top sails double reefed, main sail and jib also stowed, wind N. and by West. The atmosphere, at this time, had a streaky, hazy, troubled appearance. Barometer falling. When the vessel first felt the head sea, the Barometer indicated atmospheric derangement, but not to such an extent as to induce any apprehension of an approaching gale.

The Barometer being a tried one, led to the belief that rough weather was to be expected, and preparations were accordingly made to meet it. On Monday the 31st, being then in Lat. 14° N., Long. 61° E., whilst in the act of taking in all sail, and having succeeded in getting the top-sails and foresail clued up, and foretop sail partly stowed, the hurricane burst in all its fury. In an instant every stitch of canvas was blown from the yards; even the mainsail, though well secured, was blown from the gaskets, went to pieces, and was entirely lost; as likewise every other sail that was stowed. At 9 A. M. the main top-gallant-mast went by the cap; at 11, the quarter boat was blown away, with one of the iron davits; at 12, the hurricane still increasing and blowing in furious gusts, the ship was thrown nearly on her beam ends. Ballast shifted, water washing up to the lower deck beams, the sea at this time running high and making a complete

breach over her,—and from the shifting of her ballast and quantity of water in her hold, she appeared to be bodily settling down. Barometer still falling, and the danger imminent; the main mast was cut away, after which she righted a little, and rose lighter to the sea, but still with a heavy list to starboard. From the great straining of the ship, the water continued pouring in through every seam. At 2 P. M. the foretopmast was carried away a foot above the cap. At 3, the foremast went, four feet above deck, carrying every thing with it; part of the wreck falling across the long boat and pinnace, stove both at nearly the same time. The mizen-topmast gaff, and spanker boom fell on deck, leaving nothing standing above board but the mizenmast. From the exhausted state of the crew, the heavy rolling of the vessel, and the sea continually breaking over her, it was found impossible to clear away the wreck, which, also striking under the counter and different parts of the vessel, threatened serious consequences. Sunday 1st November at day-light, the wind lulled a little. At 8 A. M. the hurricane recommenced with redoubled fury. The wind which before was N. and by W. suddenly shifted to the E. S. E. and settled at E. N. E. Sea breaking over her fore and aft, making a clear sweep of the deck. It is a matter of surprize and congratulation, that none of the men were washed from the pumps, which were kept incessantly going during the intervals of the sea; the spray was flying so furiously and thick, that the forecabin could not be distinguished, and every part of the body that was exposed, smarted from its effects.

On Sunday night the 30th, the Barometer fell to 29.7. During the height of the gale its lowest range was 27.6. The 1st Nov. it rose to 28°: it began to rise four hours before the gale moderated. 2nd, moderate breezes, sea going down, all hands engaged in clearing away the wreck, and getting up some spars as jury masts. Got her before the wind and bore away for Aden, where she arrived on the 15th in a very shattered state, crew exhausted from having been constantly at the pumps.

It is worthy of remark, that during the hurricane, for such it was, the wind which was N. N. W. at its commencement, veered to the Westward, backed round to the E. S. E. and E. N. E. This agrees perfectly with Reid's now generally admitted theory, of the circular and

progressive motion of storms. It was fortunate that the *Seaton* was on the proper tack when the wind changed ; had it veered forward instead of aft, before the loss of her masts, it is more than probable she would have gone down by the stern, as many ships are supposed to have done in similar hurricanes.

On Sunday evening, the 30th October, there was neither cloud nor fog-bank in the western horizon, yet the sun went down fiery red and contracted in appearance. His rays instead of glancing obliquely across the waves, seemed to dip and lose themselves almost perpendicularly in the long heavy swell. During the height of the storm the rain fell in torrents, the lightning darted in awful vividness from the intensely dark masses of clouds that pressed down, as it were, on the troubled sea. In the zenith there was visibly an obscure circle of imperfect light of 10 or 12 degrees. When the hurricane took off, the scene to leeward was awfully grand,—thick masses of the darkest purple-coloured clouds were rolling over each other in inconceivable confusion, tinged and lighted up in different places by intensely vivid lightning. The hoarse roar of the retiring storm, mingled with the hollow growl of continued thunder, as they slowly retreated with the gale, left an impression on the mind not easily to be forgotten ; the respiration of every person on board was affected : this is to be accounted for by the electric state of the atmosphere with which all hurricanes seem to be intimately connected, if not entirely excited and influenced thereby. The lowest range of the Barometer was 29.6. At Bangalore, in which appears to have been the same gale, it fell to 27.4 ;* but as the *Seaton* seems to have been in the centre of the hurricane, or nearly so, it is very probable that it fell quite as low as 27.4, or even lower. It is a matter of regret, that the state of the Thermometer was not noted. The hurricane will likely be found to have crossed the Persian Gulf, in about the latitude and longitude of Bahrin.

I subjoin an Extract from the Log of the Barque *Chieftain*, which vessel you will observe was not far from the *Seaton* on the 31st.

29th October.—Lat $7^{\circ} 52'$ N. Long $55^{\circ} 54'$ E. Light airs, cloudy weather, sea calm.

* This is without correction for the altitude of the station.

30th October.—Lat. $8^{\circ} 26'$ N. Long. $56^{\circ} 46'$ E. Wind N. E. and by E. Light breeze, cloudy.

31st October.—Lat. $9^{\circ} 40'$ N. Long $57^{\circ} 6'$ E. Wind N. N. W. and N. W. and by W. Light breeze, cloudy.

1st November.—Lat. $11^{\circ} 12'$ N. Long $57^{\circ} 15'$ Wind N by N. $\frac{1}{2}$ N. to N. W. by W. $\frac{1}{2}$ W. Moderate breeze, cloudy.

2d Nov.—Lat. $13^{\circ} 5'$ N. Long $57^{\circ} 15'$ E. Moderate breeze, cloudy, heavy head-swell, ship plunging deeply; ship's head N. and by W.; took in the small sails. Breeze moderate, cloudy, dark gloomy appearance, with vivid lightning; latter part squally with heavy rain. p. m. wind W. by N. veered round to W. S. W. and S. W. By this it is evident, the *Chieftain* met the sea occasioned by the same tempest.

The accounts received up till this date, from different parts of the Arabian coast, convey intelligence of a great number of vessels having been lost in the same hurricane. These have been large buggalows, principally belonging to subjects of the Imaum of Muscat, conveying dates, &c. from the Persian Gulf to Aden and different parts of the Red Sea. Fifty-one vessels have been lost to the Northward of Cape Isabella and between it and Rasel-had, nine to the Southward of Gardafui, ten between Shabal and Aden; making a total of 70 vessels, the crews in most instances saved.

At Aden, the weather from the 29th October till the 8th November was stormy, cloudy, and unsettled; the tides rose higher than I have known them to do for the last four years; winds from E. N. E. to E. S. E. During this time a heavy sea rolled into the Eastern, Molkut and Bundera-mar bays, which made it impossible for any vessel to have ridden at anchor in either place with any degree of safety. Not having had a Barometer, I cannot say how it was affected; but am of opinion, it indicated the neighbourhood of the hurricane.

The Ship *Maria* left Aden for Bombay two days before the *Seaton*, and arrived at Bombay on the 7th November, having been one month on the passage. An extract from her log shewing her Lat., and Long. and weather met with, from the 29th Oct. till 2nd Nov. would be interesting, and assist in tracking the extent of the hurricane.

I am, Sir, yours faithfully,

JOHN P. MALCOLMSOM,

Surgeon, Political Residency.

Aden, 27th December, 1842.

Before entering on the Summary of the grounds upon which I have laid down the tracts assigned for this storm in both the accompanying charts, I give for the Bay of Bengal, where we have many ship's logs to consider, a tabular statement. I have not thought it worth while, for the few data which we unfortunately have for its progress over the peninsula and in the Arabian sea, to add these to the table; of which the object is to present with more clearness the corresponding states of the weather over a large extent of ocean at the same time than can be done by the mere descriptions.

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Tabular View of the Winds and Weather for the Madras Storm of 23d October, 1842.

Date.	Names of Place or Ship.	Winds and Weather.	Lat N.	Lon. E	Bar	Ther.	Simp.	Remarks.
Noon, 21st Oct. 1842.	Brig Waterloo, ....	.... NNE. to NE	10 16	92 23	..	..	..	{ To Midnight squally and in- creasing.
	AT MADRAS.	Fine.						
Noon. 22d Oct. 1842.	Brig Waterloo, ....	.... NE. heavy gale, ...	13 27	90 03	..	..	..	{ The same throughout; Mid- night, wind East.
	Lady Feversham, ..	.... N. and N.W. squally,	12 15½	86 5	..	..	..	Increasing to Midnight.
	Ann Metcalfe,	Moderate, Noon increasing to Midnight from North, ....	..	..	Midl. 29 20	75	..	{ Sea from the North, small rain and thick weather.
	London, ..	To Midnight fresh NE. squalls,	..	..	29.75	..	..	{ Ship standing to the ESE. or towards the Storm.
	Sarah,	1 P.M. breeze from NE. fresh- ening to Midnight,	14 52	83 24	..	..	..
	Stalkart, ..	NbE. P.M. NE increasing and variable ..	12 10	80 33	..	..	..	High sea from the NE.
	AT MADRAS.	Fine.						
	Favourite, ....	.... NbE. to Midnight and squally, dark threatening weather, ..	12 12	81 40	..	..	..

Date.	Names of Place or Ship.	Winds and Weather.	Lat. N.	Long. E.	Barometer.	Ther.	Simp.	Remarks.
Noon, 23rd Oct. 1842.	Brig Waterloo,	Fine P.M. West South,	° 14 45	° 55	..	..	..	By Noon all sail set.
	Lady Feversham,	South, furious Hurricane from Midnight to 6 A.M. Noon moderate ESE.	12 04	..	29.70 to 20 40	..	..	At 1½ A.M. d'smasted.
	Ann Metcalfe,	4 A.M. gale and Hurricane from the Northward, Noon lulled, P.M. South, Hurricane,	12 0	85. 30	8 A.M. 28.70 Noon 28.50 8 P.M. 28.8) Midr. 29.10	..	..	..
	London,	Noon strong gale, NNE. and heavy gusts, P.M. NE. 4 P.M. 12 56 ENE.....	12 56	83. 55	6 A.M. 29.60 Noon 29.70 4 P.M. 29.70	..	..	..
	Sarah,	NE. to NNE. P.M. Noon hove to, increasing gale, 6 P.M. 14 07 NE.	14 07	81. 24	29.73	..	..	{ Bar. 1 P.M. 29.70; at 2, 29.65; at 3, 29.62; at 4, 29.58; at 6, 29.50. ●
	Favorite,	NNE. to NEbN at Noon strong gale; P.M. NEbE. hove to, ..	11 49	83. 35	..	..	..	{ At 10.15 on her beam ends, wind veered between Noon and Midnight to NE. but time not marked.
	Stalkart.	A. M. Hard gales NNE. in- creasing 10 P.M. Hurricane 11 33 NW. ..	80. 55	..	..	..	..	..
	MADRAS and Roads,	Strong breeze from North, in- creasing to Midnight. ....	..	..	..	..	..	Heavy swell from NE

Date.	Names of Place and Ship.	Winds and Weather.	Lat. N. Lon. E.	Baromet.	Ther.	Simp.	Remarks.
24th Oct. 1842.	Brig Waterloo,	... Fine,	14 44	8b 38	..	..
	Lady Feversham,	.... Moderate with squalls,	13 16	8b 15	..	..
	Ann Metcalfe, ....	.... Decreasing from Midnight. Noon moderate, ..	12 6	81 30	4 A.M. 29.20 8 — 29.50	..	
	London,	.... Veering to SE., moderating at Noon, P. M. ESE.	12 34	83 41	29.70 29.50	81	
	Sarah, ....	.... Veering, NEbE, to EbS At Noon strong gales, P.M. SSE.	13 34	83 53	4 A.M. 29.63 5 — 29.73	..	
	Favorite,	.... Daylight SE. Noon moderat- ing, P.M. SEbS. ..	11 53	83 35	..	..
	Stalkart,	.... 6 A.M. West furious gale, 10 WSW. Noon moderating.	11 33	81 31	..	..
	MADRAS,	.... At Night smart squalls. 8 A. M. NNW. gale thick and heavy. Noon Wind N. to NNE. 2 P. M. NNE. and NNE. to ENE.; at 6.7. EbS. and ESE.; at S. SE. 10 clear- ing up. ....	..	..	3 A.M. 10 — Noon 29.78 2 P.M. 29.72 9 — 29.84	..	Mostly shipped at 9 to noon and stood out East; ♂, stood to the SE.
	Ships putting to Sea from Madras Roads, ..	....	..	..	..	..

Note—The object of this Table being to trace the track of the storm I have not given here, or they offer little or no data for that purpose, the ships which shipped between 8 A. M. and Noon from Madras Roads, which being all in the Northern half of the storm, had all the wind veering gradually from North or NW. in the Roads to SE. in the offing, and none of them being far enough to the South to meet with the centre. The wrecked ships were partly I think drifted on shore for want of canvas, and partly by the storm uate or storm current, to which I shall refer in the remarks at the conclusion.

Date.	Names of Place or Ship.	Winds and Weather.	Lat. N.	Lon. E.	Barometer.	Therm.	Remarks.
24th Oct. 1842.	Lady Clifford off Gore to Sadras,	Na. Gale from the Westward and WSW.	° Noun 11 9 Mdt. 12 20	° S 19 S 55.	Noon 30.50	..	{ Bar. from 29.90 to 30.00 at Noon 29.70: at 5 p.m. and 29.90 at Midnight. Pro- bably too high.
	Pondicherry, ..	10 A.M. NW. to WNW. squalls; 4 P.M. violent Hurricane, S P.M. NW. to WNW. and calm when renewed from SW. to South, at 9 P.M. SE.;	11 59	..	..	..	Bar rose on the morning of the 24th.
	Porto Novo, ...	Fresh gales NW. 5 P.M. shifted to SW. at Midnight South.	11 31	..	..	..

Summary.

It is evident enough, that this storm was one coming in upon the Coromandel coast from the Eastward and it will be observed by our charts, that we have secured, through Captain Biden's zealous assistance, a chain of vessels, (which almost appear as if *stationed* there) from the Andamans to Madras; every one of which experienced the commencement of the storm before it terminated with the vessel to the Eastward of her; and every one of which had the winds and shifts of wind exactly as they *should* have them upon the supposition of a great whirlwind, rotating from left to right, or by S. E., N. W.* and moving at the same time forward, *and these winds, and shifts of wind, and successive storms can be explained by no other theory!* If the Law of Storms for the Northern hemisphere was yet to be demonstrated, it could scarcely be so more completely than it has here been: I begin of course with the vessel farthest to the Eastward.

This is the *Waterloo*, which on the 20th October at noon was passing the Southern extremity of the Andamans with fine weather, and from thence steering to the N. W., with fresh N. N. E. breezes. On the 22nd October, we find her at noon in lat. $13^{\circ} 27'$ N. and long. $90^{\circ} 03'$ E., being then three degrees to the Westward of the Andamans, and ten degrees to the East of Madras, with heavy gales from the N. E. which had increased from the midnight preceding; and by midnight of 22nd to 23rd, when she had made about a degree to the Northward and Westward; and when the storm, if it then existed as a circular one, had also travelled to the Westward: the wind was at Eastward moderating. We have no Barometer marked, but this change is that which a rotatory storm would give, and which a mere monsoon gale would scarcely do. I take it therefore, that at noon on the 22nd, the centre of this storm was about 120 miles to the S. E. of the *Waterloo's* position. I have carried the line marking the track from the direction of the Andamans, and if we take the increasing breeze of the 21st to have been part of the storm, the centre will for that day fall to the Eastward of these Islands; but we have too little authority I think, to assign it any place for the 21st.

* This is Professor Dove's description of the rotation, and as it is better than ours I use it here, and shall use it in future.

On the 23rd, the *Waterloo* had fine weather, having stood to the N. W., and the wind at noon South and S. Easterly, being altogether out of the reach of the storm; another proof also, that her gale of the preceding day was part of a rotatory, and not a monsoon gale.

The *Lady Feversham*, which is the next ship to the *Waterloo*, was at midnight on the 22d-23rd about 220 miles to the S. W. by W. of her, and about on the latitude of the track of the storm; she had the wind increasing so rapidly from the North and N. by W. from noon to that time, that at 11 P. M. 22nd, it was blowing a gale, and at 1-30 A. M. of 23rd, a complete hurricane, so that she was just enveloped in the hurricane when it had entirely left the *Waterloo*. At 1-45 A. M. of the 23rd she was dismasted, and at 2-45, the calm centre reached her. At 3-30, the hurricane is stated to be with her at its greatest force; her Barometer being at 28.30, from which time it moderated, till at noon it is called a strong wind at E. S. E.

The *Ann Metcalfe* is the next vessel, and with her it is not called a hurricane till 8 A. M., or about 8 hours later than with the *Lady Feversham*: and with the *Metcalfe* the calm took place at noon, giving thus pretty nearly the centre for noon that day, which also agrees with the log of the *London*, which had "a strong gale" at N. N. E. at this time, and generally with those of the *Favorite*, *Sarah*, and *Stalkart*.

These data are all good for the centre of the storm for the 23rd in about lat. 12° N. long. $85^{\circ} 30'$ E. which is also given (evidently in such weather an estimated one) as the position of the *Ann Metcalfe* at noon.

There are, in adopting it as the centre, two slight discrepancies to be noticed; the first, that though it is only 45 miles to the Westward of the *Feversham's* position, that vessel at noon had the weather moderating fast, and wind from E. S. E.; the second, that the direction of the wind with the *Favorite* (N. N. E.) if her position is right, would place the centre further to the Southward, and the last, that though almost fine with the *Feversham*, it was beginning to be felt as a gale by the *Sarah*, which was at 145 miles of distance from this centre.

We cannot, however, take upon ourselves to alter the estimate of a vessel's position, though the storm wave and storm currents must have carried some of the vessels much beyond or within their estimated

drifts. It is probable, that as the *Feversham* had no observation, she may have been in error.* The whole difference which these considerations make is not much, but I note them to shew that nothing is overlooked. Are they to be accounted for by the theory that the progressive motion of a rotatory storm, particularly when as in this case it is a rapidly moving one (12 or 13 miles an hour) tends to generate the rotatory motion farther before it? We know so little of how they act, that this supposition is at least worth mentioning. Most accounts of storms seem to agree in this, that the force of storms and the rise of the Barometer are greater and more rapid than their increase or its fall. I have marked on the chart, the spot where the *Washington* foundered on the 25th. As she had the hurricane from the Eastward, she was to the Northward of its track, and must have drifted up after it was over with the S. Easterly winds, which we see the *Lady Feversham* had, and which indeed seem usually to follow the N. E. quadrants of the storms, and sometimes their S. E. quadrants also. The ship seen by the *Washington* was probably the *Lady Feversham*, which had only a foremast left standing, though this last vessel's log does not mention any other vessel in sight; but when all hands are busy rigging jury masts and pumping, the look out is rarely attended to. The *Washington* in her sinking state, was no doubt most anxiously looking for ships.

We have now to consider the probable place of the centre at Noon on the 24th, which day it will be recollected is that of the storm's reaching Madras and Pondicherry. At Madras the veering of the wind N. N. E. by N. E. and East to S. E., with fine weather, shews clearly enough, that the centre passed to the South of that place, while the veering of the wind at Pondicherry from N. W. by the West to S. W., shews also, that it passed close to the Northward of that settlement; the short calm interval noted in the reports being the time of the passage of the centre. This is stated to have been at 20 minutes past 5.†

* See concluding remarks.

† The lowest depression of the Barometer at Madras is stated to have been at 4 P. M. 29.704; it seems to have been 4.45, P. M. before the wind was at East, but as I have already explained before, the direction of the wind varies much on approaching the land.

Now from Noon 23rd to half-past 5 of the 24th is $29\frac{1}{2}$ hours, and the distance between the place of the centre on the 23rd and Pondicherry is 385 miles, which divided by $29\frac{1}{2}$, gives about 12.4 miles per hour. In the $5\frac{1}{2}$ hours from Noon, the centre would at this rate have made 68.2 miles, which gives the distance of the centre, bearing about West from Pondicherry at Noon on the 24th or in lat. $12^{\circ} 2' N.$ long. $81^{\circ} E.$

We have now to trace the storm inland, and for this purpose our materials are the letters and reports from Ryacottah, Bangalore, Bellary, Salem, Madura, Paumban, &c., and from Cochin and Telli-chery, on the Western coast. For these we are indebted to Capt. Campbell, of the Revenue Survey; to Capt. Newbold, Assistant Commissioner of Kurnool, whose able remarks I have placed in the Summary; to Mr. Crozier, Sub-collector of Madura; Mr. Bruin, Magistrate of Mangalore, and Mr. Bourgoïn, Governor of Mahé, and my readers will now please to refer to Chart. II. Ryacottah is in Lat. $12^{\circ} 31\frac{1}{2}' N.$ Long. $78^{\circ} 5' E.$, and its bearing and distance from our centre of the 24th is about W. b. N. 184 miles, and we find that by 4 P. M. of the 24th it was blowing strong at North. By 9, it was blowing in doors and windows, so that we may take it fairly to have begun as a gale at North at 6 P. M. on the 24th; and as by $3\frac{1}{2}$ A. M. on the 25th, the wind was at East with the Barometer at 29.636, its lowest depression, we may assume that the centre was now on or near the meridian of this place, at say 60 or 80 miles distance; for we see by Capt. Newbold's letter, that it was felt severely at Salem from the N. E. (time not mentioned,) which shews that its centre, taking it to be then a circular storm, was yet to the South of that station, and that it was *not* felt at Madura, 104 miles South of Salem, or 154 of Ryacottah. In estimating the position of it, we may take this spot to be also at the same distance from our centre of the 24th (already laid down) as Ryacottah itself, or 184 miles, or about in the latitude of Porto Novo; so that we have the storm travelling from Noon 24th to $3\frac{1}{2}$ A. M. on the 25th, or in $15\frac{1}{2}$ hours, 184 miles, or 11.9 per hour, our former rates being 12.4 miles per hour, a less retardative rate than we have hitherto found in former storms.

* Salem is about 50 miles S. by E. of Ryacottah.

Taking this rate, we may carry it farther on from $3\frac{1}{2}$ A. M. to Noon of the 25th May, which will give us, taking it to have passed on a nearly W. S. W. course, but curving as it passed Pondicherry, so as to form an arc, $8\frac{1}{2}$ hours at 11.9 per hour, or about 100 miles beyond the meridian of Ryacottah, if it still moved at the same rate, though of this we are not certain. This calculation would place the centre at Noon 25th in lat. about $10^{\circ} 30'$ long. $77^{\circ} 00'$ E. or about the head of the Paulgatcherry Pass on its South side, as supposed by Captain Newbold in the extract which follows in the next page.

We next find that according to the extract from the Bombay paper, the *Seaforth*, Ceylon steamer, encountered the storm at 10 P. M. on the 25th off Cochin. I have only this brief notice of this vessel's log, and thus we cannot say if she encountered its Northern or Southern half, or its centre; but as the track of the storm certainly trends to the N. Westward in the Arabian sea, as we shall see by the subsequent logs of the *Lucy Wright*, *Futtay Salam*, &c. we may say that it was in all probability the centre or the Southern half of the vortex, which the *Seaforth* met with. If we take her to have been 60 miles from the coast, which in the dangerous month of October is not an excessive offing, this would give, from our centre before mentioned a distance of 110 miles in 10 hours, or 11 miles an hour, or nearly its former rate. It must be recollected, that if the *Seaforth* might have been much closer in shore, the storm also might have been much retarded by the steep escarpments of the pass; and all we wish to shew is, that there is connection enough between its rates of travelling, and the times at which it was felt in various places, to enable us to pronounce, on fair and reasonable, if not on positive grounds, that it was *the same* storm throughout.

Before tracking it farther at sea, I shall give here Capt. Newbold's highly interesting views as to the passage of the storm over the peninsula.

“ From the physical configuration of the country to the North, West, and South of Madras, it strikes me that any aerial current coming from the Eastward, would be directed from its progress in a direct Westerly direction by the high line of the Eastern Ghauts, and turned in a South-Westerly direction by the break of Salem, whence sweeping across the plains of Coimbatore at the Southern base of the *Koonda* and *Nilgherry* escarpments, it would be concentrated on that singular gap

in the Western Ghauts—the Paulghautcherry pass, whence it would make its escape Westerly to the Indian Ocean in the direct latitude of the Laccadives. I enclose you a small map, of which I beg your acceptance, on which I have marked by arrows, the probable direction of the Madras storm,* which if it be the identical one that visited the Laccadives, must have pursued this course, and have been felt at Arcot, Vellore, Salem, Darapooram, Coimbatore, Paulghautcherry and Paniani, on the Western coast, the appropriate situation of which I have marked in ink on the map. It will be also seen, that currents of air, blowing Easterly across the peninsula about the latitude of Madura, and winds blowing Westerly about the latitude of Cochin or Alleppey, must be diverted Southerly by the Western Ghaut ridge to Cape Comorin, a circumstance which may account for the gusts experienced off this Cape during *both* monsoons. Winds blowing from the W. in the latitude of Paniani and N. of it, Calicut, Tellicherry, and Cannanore perhaps, would be deflected by the Ghaut barrier Southerly, in the direction of the arrows on the map marked B. to the great gap of Paulghautcherry, and thence rush through it Easterly on the plains of Coimbatore and Salem.

“ The exact points where the winds are thus deflected, their minute variations of current, with their various minor influencing causes, are still matters of interesting research and a meteorological desideratum: but that they are deflected as I have described on the grand scale by the Ghaut lines of elevation which constitute the main features of the physical contour of Southern India, there can be little doubt. It is a well known fact, that where these ridges attain a certain height, neither the North-East nor South-West Monsoons usually ascend above them. I was crossing the Eastern Ghauts at the time of the storm at Madras a little S. of the latitude of Nellore, and observed an enormous mass of irregular clouds rise from the Eastward, and advance rapidly on the mountain; here the great bulk was arrested, and (collected by electric attraction?) into a long, horizontal, wall-like bank, of solid aspect and of a deep bluish hue, varied at the edges by flocculent curves and zones of sombre grey, which appeared in vivid distinctness, as ever and anon coruscations of lightning shot up and illumined portions of the gloomy mass. In height and contour, they assimilated the mural barrier opposed to them. They remained in this sullen form apparently motionless for a day or two, when they gradually dispersed. There was little wind in the sheltered valley along which I travelled, and that little variable. A few detached higher clouds escaped and passed slowly to the Westward, while portions of the upper edge of the cloudbank would sometimes curl over the top of the ridge, like the falling crest of a wave dispersing in spray, and descend in a transient shower on the Western slopes. An almost similar phenomenon is presented on the table lands on the

* I have copied in my Chart No. II, as much of the chain of Mountains as relates to our present subject.

West flanks of the Eastern Ghauts on the commencement of the N. E. Monsoon.*

"The almost effectual barrier presented by the Eastern Ghauts to the force of the N. E. monsoon is a proof, that this great aerial current is confined, generally speaking, to the lower strata of the atmosphere. The same may be perhaps said of the Madras storms, which generally travel from the East. Though often *commencing* from the N. and N. W., the current from the East first striking the Ghaut line to the N. of Madras, that city thus receives this deflected Southerly current previous to the arrival directly of the main body from the East. The foregoing remark, of course, you must apply with much modification to the *true whirlwind storm*, which owes its vortical movement to far different causes. The *average* height of the Eastern Ghauts N. of Madras is about 1,500 feet.

"Places situate on the table lands *East* of the *Western* Ghauts experience still less of the S. W. Monsoon (the heavier of the two,) than the tracts sheltered by the Eastern Ghauts from the N. E. Monsoon. This is ascribable to the *greater average height* of the former, (3,000 feet above the sea,) and to their more continuous character as a mountain chain. The almost only exception to this remark arises from a remarkable opening in them; viz. the gap of Paulghautchery, which I have already alluded to as the probable route by which the Madras storm found its way across the peninsula to the Laccadives. It may be as well here to state in corroboration of this supposition, that it is well known (Madras Almanac 1840) that ships navigating the Malabar coast during the *N. E.* Monsoon, commonly experience a stronger gale in the neighbourhood of Paniani than elsewhere; and this break in the Ghauts appears to be the cause of this effect.†

"During the S. W. Monsoon, the Westerly wind, which sweeps through this pass from the beginning of June until about September, is extremely violent at Darapooram and other places to the Eastward in a line with its longitudinal axis, as its influence is felt even farther East than Trichinopoly; but at other places a little N. or S. of the line of the pass, the current is hardly perceived. The pass is from 16 to 20 feet wide, narrower at the E. than at the W. extremity: lofty rocks of the Koondah and Nilgherry chains on its Northern, and the Palghaut groups on its South flank—its surface is pretty level; the slope from the plains of Coimbatore to those on the coast so gradual as to be almost imperceptible; the height of the pass above the sea about the centre (roughly approximated by means of the boiling point of water) is 900 feet.

"I will write to Salem for such information as I can procure."

* We are forcibly reminded here of the Devil's Table Cloth preceding a S. E. gale in Table Bay.—H. P.

† This is confirmed by Horsburgh, and the experience of all navigators in that sea

The foregoing views it will be seen, by those who have followed the series of these memoirs, are exactly analogous to those advanced in my first memoir, where I have given a chart illustrative of the deflection of the S. W. Monsoon, by the mountains on the coast of Arracan, from Cape Negrais Northwards, by the Cachar and Bootan ranges, till, by those of the Himalaya, the S. W. Monsoon for a part of its duration is converted into a stream of Easterly winds. There can also be little doubt, that as Capt. Newbold remarks, the winds and hurricanes rarely extend to any great perpendicular height, and are thus constantly subjected to all the deflections and interruptions which hill and mountain ranges occasion.

We have now, having I think, shewn satisfactorily that the storm was identically the same with that of Madras (?) to follow it in its course in the Arabian Sea ; and our next document is, (not neglecting to note the fall of the Barometer at Bombay, from the 25th to the 29th as we proceed,) the notice of the dismasting of the *Lucy Wright*.

This vessel was on the 27th, when the height of the storm occurred with her, in lat. $13^{\circ} 2' N.$ long. $71^{\circ} 39' E.$ This spot is distant 340 miles from that at which we have placed (by estimation only) the centre of the storm on the 25th at Noon at the head of the Paulghautcherry Pass, and we know that while it was raging at sea with the *Seaforth* ten hours later, it was not felt, though there were clear indications of it, to the experienced native craft and fishermen, and these would doubtless have been much more distinct with the assistance of a Barometer and Sympiesometer, at Tellicherry and Mount Dilly, 100 miles to the North of the *Seaforth's* position. Our reports from Mahé and Karical also confirm this ; but again at Mangalore we find on the 25th, strong gusts of wind from the N. W., as if there was then a commencement of a storm hereabouts, the original one having separated into two by the various obstacles it met with. It is, however, just possible, that these N. W. gusts were nothing but parts of the storm pouring over the Western Ghauts. The *Higginson*, 75 miles West of the *Lucy Wright*, had a heavy gale for 6 hours from West to South on the 28th, and must have been therefore in the S. E. quadrant of it ; the centre being thus to the N. W. of her, and having passed nearest to her, and to the Northward, at 6 A. M. of the 28th,

as would appear by the fall of her Barometer. We do not know how the *Lucy Wright* had the wind, so that we must take the *Higginson's* datum as the nearest and most detailed, and her account, with what we have already remarked of the limited extent of the storm off Cochin with the *Seaforth*, which excludes the supposition of these storms being the same, may allow us to assume, for we can do no more, that at 6 A. M. on the 28th, the centre of a storm was, say 40 miles or less to the North of her, and that her Easterly and N. Easterly drift with a Westerly and South-Westerly gale brought the wind to South, which it might quickly do when on such a small circle.

We know only of the *Lucy Wright*, that she was dismasted the day preceding, but in what part of the storm, or where she may have drifted to by this time, 6 A. M. 28th, we are quite ignorant. I have therefore not marked any circle for her on the 27th,* and though it is certain that, as we shall presently see there were two storms, we do not know their tracks hereabouts.

But we now find by the *Futtay Salam's* log and track, that she had been running to the N. by E. from about lat. 8° to lat. 12°, and between 68° and 69° E. till midnight of the 26th, when she evidently plunged into the circle of a storm on its S. E. quadrant, as she had then a gale from S. W. which increased to a hurricane from S. S. W., South, and S. East, moderating again a little by midnight of the 27th-28th; so that she may be taken, from midnight of the 26th to midnight of the 27th, or for 24 hours, to have been drifting, and pretty close to the centre, across the S. E. quadrant of a storm, of which the centre was of course brought successively to the N. W., West, and S. W., of her, as it progressed and the vessel drifted.

Now if we consider this with the chart and log before us, we may fairly allow, that at Noon of the 27th, the centre of the *Futtay Salam's* hurricane bore from her about West, 30 or 40 miles, or was in lat. 12° 00' N. lon. 68° 20' or 30° E., and I have from that point struck a circle to shew it. This circle will also shew, that this storm and the

* There is a considerable degree of uncertainty about all newspaper extracts relating to storms, on account of the errors with which, even in the best printed ones, these accounts always abound. Mr. Redfield I think alludes to the same circumstance, as much diminishing the value of newspaper notices.

Higginson's could not have been the same, for the *Higginson* being bound to Bombay, must have been on the 27th, (unless she lost ground between that and the 28th,) somewhere to the Eastward of her position on the 28th, which would place her on, or not far from the meridian of the *Futtay Salam's* storm, where she would first have had the wind from N. E. East or S. E., being in its Northern half; whereas she had it "from West to South," or was in its S. Eastern quadrant like the *Futtay Salam* on the 26th; and if on the 27th at Noon, the *Futtay Salam's* hurricane be supposed to reach to the *Lucy Wright's* position, and have been there violent enough to dismast her, (at a distance of 180 miles from its centre,) which is very improbable, this would *a fortiori* have given the *Higginson* an Easterly or E. S. Easterly hurricane on the 27th; when it is apparent that she had fine weather; for it was evidently not then even threatening enough to be mentioned in her log. She was, as I before said, bound to Bombay, and must therefore have been coming from some point between S. and N. W., and this would always have given her bad weather from some quarter on the 27th, as would also any track we can suppose for the storm. Hence it is clear, that the *Futtay Salam's* hurricane and the *Higginson's* storms could not be the same; as the *Lucy Wright's* and *Higginson's* might have been so, the one being dismasted on the 27th, and the other meeting a storm as she came from the Eastward on the 28th. In the absence of further information then, I suppose that there were here, as we have found before where the track of a storm crosses, or makes a considerable angle with the prevailing Monsoon, two storms.* Of these I take the *Lucy Wright's* and *Higginson's* to have been the smaller one, and the *Futtay Salam's* and *Seaton's*, which we must now consider, to have been the greater and more direct one.

The *Seaton's* storm it is clear from the shift of wind was a severe hurricane travelling from the E. by S. or E. E. S. to the W. N. Westward. I have marked the Lat. and Long. at which it first struck her, and that to which she might have drifted between, say 6 A. M. on the 31st and 6 A. M. on the 1st with a N. N. Westerly gale, drifting

* The probability of two storms is much increased, as far at least as mere dynamical forces and interruptions go, by considering how many currents our storm must have created in its passage over the Ghauts, and the interval of threatening weather only along the coast under the line of the Ghauts.

before it at the rate of $3\frac{1}{2}$ miles per hour, the least which we can allow for a disabled ship. This brings her to lat. $12^{\circ} 36'$, long. $60^{\circ} 38'$ E. as the spot where the centre passed her.

We have from this point then, which is tolerably well ascertained, and which the storm reached at 8 A. M. on the 1st November, the following data in time and distance.

	Distance.		Time.	
	miles.	days.	hours	
To the centre of the <i>Futtay Salam's</i> } hurricane, Noon 27th October, }	480	4	18	or 114 h. or 4.2 per h
To the centre of the 25th at Noon, } near the Palghautcherry Pass. }	990	6	18	or 162 h. or 6.1 per h.
To the centre of the 21th to the } Eastward of Madras. }	1230	7	18	or 186 h. or 6.6 per h.

The mean of this is 5.6 per hour, or only one-half of what we allowed it to have in crossing the peninsula, and less than half of what we have proved it to have had in the Bay of Bengal; but then we must not forget, first, that it had to force its way over the peninsula, and through 900 miles of distance in the Arabian Sea against the S. W. Monsoon; next that these sort of calculations and allowances always assume some initial force or rate of motion; and lastly, that we know absolutely nothing at all of the *cause* either of the rotatory or progressive forces, or of their opposing resistances and retardation, or if they acquire, or have under any, or what, circumstances, the power of increasing the velocity of either of their motions.

Of all these things, and of much more which will readily occur to men of science, we are profoundly ignorant, and as I have before said, all we can now do is to register accurately, and deduce—when we must deduce—doubtfully.

The log of the *Chieftain* is the only one which now remains for us to remark upon, and it will be evident that she was on the 2nd November just far enough within the verge of the vortex to feel the sea, and have the threatening appearances with the wind veering as it would

do on the southern half of a storm, as the vortex passed on ahead, and to the Northward of her. Her position when compared with that of the *Seaton* at 6 A. M. on the 1st, shews that the track of the storm was now tending to the N. W., and we find accordingly by Dr. Malcolmson's account, that it was severely felt on the Arabian Coast, and that there were some indications of a storm at Aden. We cannot, however, upon such vague accounts, pretend to track it any farther. I grieve to add that; to the disgrace of those who may deserve the blame; neither the log of the *Cleopatra* or of the *Semiramis*, both Government steamers, have been obtainable; I have strong suspicions that both ran headlong into the storm circles. Is the Government of Bombay aware that a mistake of this kind might cost it a steamer, or at least half of a lac of rupees of damages? *

Conclusion.

I mention with some satisfaction here, not only that this is the first storm which we have tracked in what must soon be the great highway between England and India, the Arabian Sea, but also that we again find confirmed the law which my previous researches have shewn to hold good for the China Sea and Bay of Bengal, *i. e.* that the storms always come from the Eastward, and travel to the Westward, and it is gratifying to have now ascertained this, with some trifling intervals over 60 degrees of longitude, or one-sixth of the circumference of the globe. As public attention is gradually drawn to this important subject, we may hope that, ere long we shall at least be able to trace the storms of this great, and to us most important division of the Ocean, with as much accuracy as those of other parts of the Eastern Seas.

I must not omit also to point out an important practical lesson for the navigator on the Coromandel Coast, which should not be omitted, and it is this. Those who have studied this subject, and are acquainted with the publications of Reid and Redfield relative to the storms of the Western hemisphere, and with my own relative to those of the Eastern hemisphere, are well aware of the abundant evidence which exists (and there is much more yet unpublished,) to prove the existence of "storm waves" and "storm currents."

To those, however, who are not fully acquainted with the subject, I may say, that the "storm wave" is a mass of water of greater or less diameter according to the storm, raised above the usual level of the ocean by the diminished atmospheric pressure and perhaps other causes, and driven bodily along with the storm or before it, and when it reaches bays or river mouths, or other confined situations, causing by its further rise when contracting, dreadful inundations; but upon open coasts rarely so, or not in so great a degree, as it can there spread out quickly and find its level.* The "storm current" may be briefly described as circular streams on the circumferences of rotatory storms, and of this also we have evidence enough for the mariner at all times to admit, and be on his guard against the *possibility of*, or even the *great probability of*, them.

We have thus in every storm two sets of forces (currents) independent of that of the wind, acting upon a ship; the one carrying her bodily onward on the track of the storm, and the other drifting her round the periphery of that part of the storm circle in which she may be.

Taking, as the simplest case, and one nearly that of Madras Roads, a storm travelling from East to West, and striking upon a Coast running North and South, its centre passing over Pondicherry, we should have then, for all ships in the offing, one current, "the storm wave" carrying them directly on shore, with greater or less velocity, as they were nearer or farther from the centre; and other currents, "the storm currents" varying in their direction according to the situation of each ship in the storm circle, but always agreeing pretty nearly with the direction of the wind.

The current of the storm *wave* then is setting due West, but that of the storm *current* West on the North side of the storm circle, and due *East* at its South side; South at its Western edge, and North at its Eastern side, and so on in all the intermediate directions; and a ship putting to sea from Madras roads in our supposed case, will be carried right towards the shore by the *storm wave*, and to the S. Westward also by the *storm current*; but if putting to sea from

* The deep sea wave also, (the *flot de fond* of the French writers) no doubt assists the inundation; but as this is not a surface cause, I do not allude to it. ●

any place to the Southward of Pondicherry, she would be carried one way by the storm wave, and the opposite one, or partly so, say to the S. E., East, or N. E.: by the storm current; so that as to mere Westing, the effect of the one would probably neutralise that of the other. The case of ships on the Northern half of the storm, where both forces are against him, should however be borne seriously in mind by the seaman. It was probably the cause of the indraught which wrecked the ships which were lost in this storm, and of some of the others finding themselves in much shoaler water than from their run, they might reasonably have supposed. Captain Biden's suggestion in the port orders, to keep a due attention to the lead in these cases is then founded not only on merely sound nautical experience, but upon good scientific grounds also. To neglect the lead is a positive act of barratry or folly, for in these storms it is impossible to estimate the true distance from the coast by any other means, and the three forces, the "storm wave," "storm current," and the drift occasioned by the wind, would form a complex problem in fine weather. The seaman will not fail to recollect how much influence the storm wave may have upon his position in places where, as in the British Channel,* a storm coming from the Westward, brings with it a vast mass of water from a great Ocean like the Atlantic, so that with a Southerly or South-westerly gale, he finds himself set far to the Eastward by some hitherto unknown but fatal current: and I trust that when I say that, if we can obtain documents, we may trace out accurately the laws of these dangerous complications, I shall add another claim to the assistance of every right minded seaman, and of every friend to humanity.

* I allude here, it will be perceived, to the two recent and harrowing catastrophes of the *Reliance* and *Conqueror*. In both these cases the gale being Westerly, the vessels were on the Southern half of the storm circle, and had thus both the storm wave and storm current carrying them far to the Eastward of their reckoning.

Translation of the Naipáliya Devata Kalyána, with Notes. By B. H. HODGSON, Esq. Resident at Kathmandoo. .

1. May the first born, the holy Swayambhu, Amitaruchi, Amágha, Akshobhya, the splendid Vairo Chana, Manibhava, and the supreme spiritual preceptor Vajra Satwa preserve us in all our journeyings and in all our abidings: May Prajna, Vajradhátwi, the all-bountiful Arya Tárà, and the rest be propitious to us. I adore them. .

1. Fully to explain the substance of the stanzas comprised in this little manual, would require a comment ten times as large as the text. I must therefore content myself with simply announcing a few of the general principles of Buddhism, which may serve to connect the sense of the stanzas, leaving the exposition and proof of those principles to a future occasion, if not, to more competent ability. Buddhism, as it is to be found not only in the recent writings and present practise, but also in the very ancient Bouddha scriptures of Nipal, recognises a theistic, as well as an atheistic, system of the universe. According to the former, from an eternal, infinite and immaterial Adi Buddha proceeded, divinely and not generatively, five lesser Buddhas, who are considered the immediate sources (Adi Buddha being the ultimate source) of the five elements of matter, and of the five organs and five faculties of sensation. The moulding of these materials into the shape of an actual world is not, however, the business of the five Buddhas, but is devolved by them upon lesser emanations from themselves denominated Bodhisatwas, who are thus the tertiary and active agents of the creation and government of the world, by virtue of powers derived, immediately from the five Buddhas, ultimately from the one supreme Buddha. This system of five Buddhas provides for the origin of the material world, and for that of immaterial existences, a sixth Buddha is declared to have emanated divinely from Adi Buddha, and to this sixth Buddha, (Vajra Satwa by name,) is assigned the immediate organization of mind, and its powers of thought and feeling. The five, as well as the six Buddhas, are constantly invoked collectively under the names of the Pancha and Shata, Buddha and Ratna. All these Buddhas are often styled Ripopadaka, Manasi and Dhyani, titles which would seem necessarily to distinguish them, not only from the mere mortal Buddhas of the Swobhavika sect, but also from any generatively produced beings. Nevertheless in the first stanza of this manual (no very good authority) a sakti or spouse is assigned not only to each of the five Buddhas, but also to Adi Buddha himself: and I suppose therefore that with respect to these Bouddha goddesses of the Aishwarik, as we must adopt the fantastic theory of the Vedantika Brahmanists, and consider them mere nominal deities; until we can assert (as I think we shall soon be able to do) that the theory of Sakties is a modern corruption of Buddhism derived from Brahmanism. I am aware that the Swobhavika Saugatas typify the innate powers of matter by a Goddess, but this is a notion totally different from the assignation of a female medium of activity to creators working declaredly by volitions, or (as the Bouddhas phrase it) by Dhyánas: and such is the statement which I have found in respect to the "Pancha Buddha" of the Aishwanikas in works of higher

authority than the Kalyána. But to return to my text, from which I have unwittingly too far deviated; the invocation of the first stanza is first, to the supreme Buddha, next to the six Buddhas, (whose more familiar names will be found below,) then to the Sakti of Adī Buddha, and lastly to the Sakties of each of the six Buddhas. The names of these ladies are as follow: Adī Buddha's Prajña, Vairo Chana's Vajradhatweswari, Akshobhya's Lochana, Ratna Sambhava's Māmukhi, Amitabha's Pandara, Amoghha Siddha's Tārā, Vajra Satwa's Vajrasatwatmika.

2. May the Goddesses Sampatprodā, Ganapatihridayā, Vajravidrā-vini, Ushnishā, Parna, Kitivaravadana, Grahamātrikā, Kotilākshi, and the Pancharakshā be propitious to us. I adore them.

2. The distinction of Swobhāvika and Aishwarika Buddhists has already been alluded to. There is another division into exoteric and esoteric doctrines. The goddesses invoked in this stanza belong to the esoteric system, and to the Swobhāvika school: for they are all said to have been produced from Swobhava "each with her own Vija Mantra." It may be proper here to observe that the Swobhāvikas do not deny intelligence, but immaterial entity. They insist that those powers which others say were impressed on nature by the God who created nature are proper to matter itself which alone is; and which is eternal, not in its palpable individual forms, but in its unpressable elements. They add that nature produces not only man but superior beings, (though none with such a plenitude of power as man is capable of attaining,) and amongst these beings are the goddesses invoked in this stanza. The more familiar, and (as it were) proper name of Sampatproda is Vasundhara, of Kitivaravadana is Marichi, of Kotilākshi is Pratingira, and the names of the five Rakshas are Pratesara, Māhasahasrapramurdini, Māha Mayari, Maha Setavati and Māha Mantranusarini.

3. May Ratna Garbha, Dīpānkara, the Jina Manikusama, Vipasyi, Sikhi, Viswabdhū, Kakutsat, Kanaka Muni, Kasyapa, and Sakya Sinha: may all the past, present and future Buddhas, whose excellence exceeds the bounds of the ten faculties be propitious to us. I adore them.

3. The objects of invocation in this stanza are ten Manushi Buddhas. The seven last are the famous "Sapta Buddha," and I doubt the propriety of associating any other to them. I am told that the Karana Pundarika assigns these 10 Buddhas to the four yugas, giving the three first named to the Satya, an idle story, or at least a legend contradicted by higher authority, such as that of the Sambhu Purana, which makes Vipasyi and Sikhi the Buddhas of the satya yuga.

4. May the first of the Bodhisatwas named Avalokeswara, may Maitreya, Anauta Ganja, Samantbhadra, Kshiti-jathara, Khagarbha, Sarvadyonevarakhya, Kulisvaradhara, and the great Manja Natha be propitious to us. I adore them.

4. Nine Bodhisatwas are invoked in this stanza, for all of whom the commentator claims a celestial origin and parentage, as follows :—

Aryavalokeshwar,	..	..	..	Son of Amitabha.
Maitreya,	..	..	..	ditto „ Vairo Chana.
Gagan Ganja,	..	..	..	ditto „ Akshobhya.
Vajra Pani,	..	..	..	ditto „ ditto.
Manja Natha, ..	..	..	..	ditto „ ditto.
Samanta Bhadra,	..	..	..	ditto „ Vairo Chana.
Kshiti garbha,	..	..	..	ditto „ Ratna Sambhava.
Kha Garbha, ..	..	..	..	ditto „ Amitabha.
Sarvani Varana Viskambhi,	..	..	..	ditto „ Amogha.

In this enumeration the more familiar names of the Bodhisatwas are preferred to those of the text. This commentator was doubtless an Aishwarika Bauddha, and a recent one who, according to the prevalent modern fashion has resolutely assigned a heavenly origin to Bodhisatwas of mortal mould. The first (who is the same with Padma Páni,) fourth and sixth are notoriously celestial sons of the Divine Buddhas to whom they are assigned, but the others, and especially Manjnath, are doubtless of mortal origin, and historical personages.

5. May that light which, a proportion of himself, the supreme Buddha caused to issue from the lotus that sprang from the seed planted in Nagavasa by Vipasyi, and which, (light,) itself one, became five-fold in the five Buddhas for the preservation of mankind, be propitious to us. I adore it.

5. Here the object of invocation is to the Jyoti-rup-adi Buddha of Sambhu Nath mountain, a portion of the supreme Buddha revealed in Nipal in the form of flame. The legend is to be found in the Sambhu Puran, but is too long for insertion here. It is said by the Bouddhas of Nipal, that the ever-during flame still burns in the centre of the hemisphere of Sambhu Chaitya.

6. May that mysterious portion of Prajna, born of the lotus with three leaves in the form of Guhyeswari, made manifest by Manja Deva, void of form, the personification of desire, favourable to many, the giver of boons to her worshippers, praised by Brahma, Vishnu and Siva, revealed on the 9th day of the dark half of Marg in the fathomless waters (of Nagavasa), be propitious to us. I adore *her*. (Qy. *it* ?)

6. The Jal-surupa-Prajna of Nipal is here invoked, a portion of Prajna (the Sakti of Adi Buddha) in the form of water. This legend is a part of the foregoing, and is to be found in the Sambhu Puran. When Manja Nath had let off the waters, Jyoti-rup-Buddha was revealed: Manja resolved to raise a chaitya over the sacred flame, but when he essayed it, water bubbled up so strongly on the spot that he could not lay a single stone. perplexed, he resorted to prayer, when Guhyis-wari or Tal-rup-Prajna revealed herself for a moment; so immediately the water subsided and Manja completed

the chaitya I have translated "nairatmya" without form, and "agadhe" in fathomless *water*, in obedience to two comments, and to the opinion of a learned Buddha, to whom the words and meaning of these stanzas are as familiar as household terms.

7. May Ratna Singeswara, who was produced out of the union of a portion of Maitreya and of the light of the jewel of Manichura, who issued in the form of Srivatsa out of the riven rock on mount Manichur; whom the other seven Vitaragas reverence as their chief; and who is the raft by which the ocean of life may be crossed; be propitious to us all. I adore him.

7 In this and the seven following stanzas the eight Vitaragas of Nipal are invoked. Vitaraga is a portion of a Bodhisatwa, revealed under some non-human form.

In stanza 4, we have seen that there are nine famous Bodhisatwas. Of these the first, or Aryavalokeswara, never individuated a portion of himself, nor has he any manifestation but under a human form.

The individuated portions of the remaining Bodhisatwas are styled Vitaragas. Maitrêgus is the first, under the name of Manisingeswar, and form of a waving flame called Srivatsa. The forms of the remaining Vitaragas are severally, a lotus, a flag, a kalas, a chowry, a fish, an umbrella, and a conch. Some say that the singa is also a form common to all the Vitaragas, whilst others insist that singa here applied to them means merely sign-symbol. The symbols of the eight Vitaragas are often called collectively the "eight mangalas." Manichura was a Raja of Saketa Nagar or Ayodhya, in the crown of whose head grew an inestimable jewel, which he offered to the gods to avert their wrath in a general calamity. The legends of the Vitaragas are to be found in the Sambhu Puran. They are too long to be inserted here.

8. May that portion of the Bodhisatwa Gaganganja, which at the command of Padmapani assumed the form of a lotus, in order to relieve the cruel Raja Gokarna after he (the Raja) had, in atonement for his sins, become a penitent and worshipper of Padmapani on the banks of the Vachmati, and which, as Gokarneswara Vitaraga, still remains at the confluence of the Vachmati and Amoghvati for the purpose of delivering the ancestors of those who pay their devotions there, be propitious to us all. I adore *it*. (Qy. *him*?)

8. Invocation to the second Vitaraga under the name of Gokarneswara. Gokarna was a Raja of Pancha Des in the East of Hindoostan, says the comment.

9. May the mighty Vitaraga named Kileswara, who is a portion of Samanta Bhadra, and who took the form of a flag in order to frighten the furious serpent Kulika, when he secured it with the flag-staff on

the mountain of Charugiri for the preservation of mankind, be propitious to us all. I adore him.

10. May Sarveswara Vitaraga, who is the portion of the Bodhisatwa Vajra Pani, left on earth, in the form of a kalas, for the preservation of mankind by that Deity when himself descended for the purpose of relieving the Vajra Acharya named Sarva Pada, be propitious to us all. I adore him.

11. May Gattesa Vitaraga, the form assumed by Manja Deva for a portion of himself in order to awaken the ignorant and idle and sensual Manja Gartho, and convert him into a profoundly learned sage, be propitious to us all. I adore him. ●

12. May Phanindreswara Vitaraga, the form assumed for a portion of himself by Sarvani Varana Viskambhi Bodhisatwa, that Bodhisatwa desirous of the form of a fish, the wearer of huge serpents as ornaments, and who, having fulfilled the desires of Oriya Acharya, took the form of a fish, be propitious to us. I adore him.

12. The address here (as in the other instances) is chiefly, if not solely, to the Vitaraga: yet it is hardly possible to give unity to it: and the sense and grammar would be improved by putting a "may" before the words "that Bodhisatwa," and so making the address both to the Bodhisatwa and to his individuated portion.

13. As Oriyana covered by his umbrella was performing penance on the banks of the Vachmati, the Bodhisatwa Prithwigarbha suddenly appeared, and established a portion of himself as Gandhesa Vitaraga, the friend of all, and standing in the presence of Lokanatha, may Gandhesa be propitious to us. I adore him.

14. Oriya, delighted at having obtained perfection by his severe ascetic exercises, began, whilst he contemplated the son of Amitabha, to blow the shell. At its sound Khagarbha, Bodhisatwa became manifest; that Khagarbha whose heart is obedient to the will of Loknatha, and who having, in obedience to his will, issued from the conch and established a portion of himself as Vakrameswara Vitaraga, departed to his own abode. May Vikrameswara be propitious to us. I adore him.

14. The rendering of this stanza was a matter of some difficulty. Two or three comments were referred to, and the mention of Oriya reintroduced in obedience to the best of them, and to the living authority already alluded to. The "son of Amitabha, mentioned in this stanza is Padma Pani: and the Lokanatha, Avalokeswara, and Abjapani of preceding and succeeding stanzas are different names for the same Deity. He is considered the Lord and Master, in an especial manner, of the eight Vitaragas.

15. May the holy Tirtha Panya where the Saga obtained rest from Tarkshya : may the holy Tirtha Santa where Parvati performed penance to allay her domestic broils : may the holy Tirtha Sankaru where Rudra went through severe austerities to obtain Doga, be propitious to us all. I adore them.

15. In this and the subsequent stanzas the fourteen greater Tirthas of Nipal are particularized, and at stanza 20, the four lesser ones are mentioned generally.

They are all frequented at this day, and the legends are to be found in the Sambhu Puran. They are too prolix for extraction.

Panya tirtha is at Gokarna, where the Vachmati and Amagh-Phula-Dayini rivers unite.

Santa tirtha at Guhgeswari ghat, where the Maradarika joins the Vachmati.

Sankara tirtha immediately below the town of Patan, at the confluence of the Vachmati and Manimati.

16. May the holy Raja tirtha where Virupa obtained the sovereignty of the whole earth : may the holy Kama tirtha where the gamekeeper and the deer went to Indra's heaven : may the holy tirtha Mimalakhya, where the Vajra Acharya performed his ablutions, be propitious to us all. I adore them.

16. Raja tirtha at a place called in Newari, Dhantila, where the Raj-manjari runs into the Vachmati. It is just below the Sankara tirtha Kama tirtha called, in Newari, Phūsinkhel, at junction of the Kesavati and Vimlavati. The former is the river which the Goorkhas have taught us to call the Vishnumati, and so for Vachmati we say with them Vagnati. Besides those two, all the other rivers mentioned are mere mountain streamlets. Nirmala tirtha at a place called, in Newari, Bji Soko, junction of Kesavati and Bhadravati.

17. May the holy tirtha Akara, where treasure is obtained by the despairing poor : may the holy Juyana tirtha where the true wisdom is got by the ignorant solely by reverencing the stream : may the holy tirtha Chintamani, where every desire is attained by those duly performing their ablutions there, be propitious to us all. I adore them.

17. Akara tirtha at a spot called in Newari, Kabang, where the Kesavati and Suvarnavati join.

Jugana tirtha at Kadokhu at junction of Kesavati and Papanasini.

Chintamani tirtha at Pachilihvaivi where the Kesavati and Vachmati join. This is the great Sangam of Nipal, where its two chief rivers (they are but puny ones) unite below the present capital.

● 18. May Pramoda tirtha where ablution secures pleasure : may Satlakshana tirtha whose waters engender auspicious attributes : may

Sujaya tirtha, by bathing in the stream of which Balasura subdued the three worlds, be propitious to us all. I adore them.

18. Pramoda tirtha at Danaga (I need hardly repeat that these names of places are Newari,) junction of Vachmati and Ratnavati. Satlakshana tirtha at Pagakhucha, where the Vachmati and Chaurmati flow together. Jaya tirtha at Nakhupoa junction of Vachmati and Prabhavati.

19. May the Goddesses Vidyadhari, Akasyogini, Vajrayogini and Hariti: may Hanuman, Ganesa, Mahakala, and Chura Bhikshani: may Brahmani and the rest with Sinhini, Vyagrihini and Skanda be propitious to us all. I adore them.

19. The four first Deities are esoteric Goddesses of the Swobhavika sect. A comment says, "Above the region of air is fire, above fire water, above water earth, above earth Sumér mountain, above it Surya Mandal. In Surya Mandal is a lotus, out of which, by virtue of Swabhava, Vidyadhari and Akasyogini were revealed, each with her own Vija Mantra." The Swobhavikas usually symbolise these elements or vijas by the letters of the alphabet. The forms of these Goddesses are very much alike, all strictly resembling those of the terrific Goddesses of Brahmanism and they are all said to be givers of the powers of witchcraft and sorcery to their adorers. The two first are said to be ranked by Amera Sinha with an inferior order of Celestials, and to such an order Hariti must be referred, since she is a Yakshini; but Vajrayogini is a Maha Devi or Goddess of the first order. Hariti's legend resembles that of Sitala, as whom Hariti is constantly worshipped by Brahmanical Hindoos, though her temple is within the very precincts of Sambhu Nath.

Hanuman, Ganesa and Mahakal are names sufficiently familiar to us. Amongst the Deities adopted by Buddhism from Brahmanism, these three are peculiar favourites, because the Bouddha legends justifying their adoption are popular and clever. The proper sentiment of the Saugatas in regard to all these imported Deities is, that they are servants of the Buddhas, and entitled only to "chakar-puja," as a specimen of the legends in virtue of which the gods of Brahmanism have been converted into Bouddha Deities take the following relative to Hanuman. In the Lankavatar it is written that when Rama sent Hanuman to destroy Ravan, Ravan oppressed by the monkey, sought refuge from Sakya in a Vihar. Hanuman unable to violate the sanctuary, went to Rama and told him that he could no farther press his advantage against Ravan, because of Sakya's protection, whose follower Ravan had become. Rama replied 'Go you also and serve Sakya.' In all Sakya's Vihars are to be found the images of Hanuman, Ravan, Mahakala and Hariti. The Swobhavikas invoke Mahakala, under the name of Vajra Vira, as self-existent, whereas the Aishwarikas adopt him with his pedigree as the son of Siva and Parvati. Chura Bhikshani, as her name imports, a female of the mendicant order of Bouddhas. Upon the interesting subject of the classification of their followers by the genuine Bouddha institutes I can only here observe, that though Buddhism is a free and equal association of ascetical saints who know no disparity of rank, save such as each may derive from his own

superior efforts of bodily mortification and mental abstraction, yet it has a technical fourfold division of its followers (very similar to that which distinguished the old Monachism of Europe) into Arhans or perfect saints, Sravakas or studious saints, Chailakas or naked saints, and Bhikshus or mendicant saints.

Brahmani and the Matrikas call for no remark. Sinhini and Vysāpini are their servants. The Aishwarika Skanda is in all respects similar to the Brahmanical Skanda but the Swobhavikas (*more suo*) make him self-existent.

20. May the two great tirthas, the source and exit of the Vachmati: may the four lesser tirthas: may the Kesa Chaitya on the Sankhochha hill, the Salita Chaitya on the Jatochha hill: may the Devi of Phullochha hill, and the Bhagavati of Dhyana prochha hill, be propitious to us all. I adore them.

20. The four lesser tirthas are named Tara tirtha, Agastya tirtha, Apsara tirtha, and Ananta tirtha. They are four kunds, situate at Vachdwara.

Saukhochha hill is that which the Goorkhas have taught us to call Sivapura. In Newari, it is Shiphucho. The legend of Kesa Chaitya says, that Krakut Chand Buddha cut off the forelocks (and so made Bouddhas) of 700 Brahmins and Kshetriyas on the spot. Half the hair rose to Heaven, and gave origin to the Kesavati (Vishnumati) river: the other half fell to the ground, whence arose numberless Chaityas in the form of Singas, a small mass of hair becoming in each the "palus" of the Lingakar Chaitya. Lalita Chaitya, says the Sambhu Puran, was founded by the disciples of Vipasya.

Jatachha hill on which it still stands, is the Arjun of the Goorkhas, called in Newari, Jamacho.

The Devi of Phullochha is Vasundhara, under the form of a conical piece of rock: the hill we call, after the Goorkhas, Phulchok. The Bhagavati of Dhyana Prochha is a portion of Gukyeswari or Prajna, under the form of a conical stone, the hill the Goorkhas have taught us to call Chandragiri.

21. May the Chaitya of Sri Manja on Sri Manja hill, erected by his disciples: may the five deities established in five separate places by Santasri: may the Puchagra Chaitya, where Sakya expounded the unequalled Purana, be propitious to us. I adore them.

21. Sri Manja Hill is the Western part of mount Sambhu, between which Sri Manja there is a hollow, but no separation. The Chaitya still stands.

The five Deities established by Sata Sri are Vasundhara Devi in Vasupur: Agni Deva in Agnipur: Vayu Deva in Vayupur: Naga Deva in Nagpur: and Gakya Devi in Santipur. All are on mount Sambhu around the great Temple. The legend in the Sambhu Puran says, that Santasri was a Kshatriya Raja of Gour Des, named Prachanda Deva, who abandoned his kingdom, and coming to Nipal was made a Bouddha by Gunakar Bhikshu, with the name of Santasri.

Pachagra Chitya is on the hollow level of mount Sambhu.

22. May the King of Serpents residing with his train in the Adhara lake: may Vighnantaka: may the five Lords of the three worlds named, Ananda Lokeswara, Harihari-hari-vahana lokeswara, Yaksha malla loka~~ra~~, Amoghapasa lokeswara, and Trilokavasankara lokeswara, be propitious to us all. I adore them.

22. The legend is the same with that alluded to in stanzas 6, 7, and 24. The serpent King is named Karkotaka, his realm formerly extended all over the valley whilst it was submerged in water. Now he dwells in a tank near the town of Cathmandu assigned to him by Manja Nath, when Manja, let off the waters that covered Nipal. The Adhara lake or tank is called in Newari, Ta Dahong.

The five Lokeswaras are Bodhisatwas. Ananta is called in Newari, Chobha Deo, and Yaksha Malla, Tuyu Khwa.

23. May the esoteric deities named Hevajra, Samvara, Chandavira, Trilokivira, Yogambara, with their several attendants: may Yaman-taka and the other nine Kings of wrath, be propitious to us: may the exoteric divinities Aparimitayu and the rest, Namsangiti and the rest, be propitious to us. I adore them.

23. The esoteric deities enumerated first, belong to the Swobhavika sect. Aparimitayu is in Buddha, and his associates as follows:—

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| 1. Aparimita Gun, Buddha. | 5. Suryottama Prabhasa, Buddha. |
| 2. Guna Ratna Sri, ditto. | 6. Vahuvihita Teja, ditto. |
| 3. Aparimita Parti, ditto. | 7. Asaukheya Kalpa, ditto. |
| 4. Sahasreswara Megha, ditto. | 8. Subha Kanaka, ditto. |

Namsangiti is also a Buddha, and his associates as follows:—

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| 1. Dridha Surya, Buddha. | 3. Supuspita, Buddah. |
| 2. Bhaishajna Guru, ditto. | 4. Ratna Keta, ditto. |

24. May Manja Deva, who having come from mount Sirsha with his wives and two Devis divided the southern mountain with his scimitar, built the town of Manja Pattan for the pleasant abode of the human race, and worshipped the deity sitting on the lotus, be propitious to us all. I adore him.

24. The language, physiognomy, architecture, manners and customs of the Newars clearly prove their Northern extraction, and in the Sambhu Puran, a person called Manja Ghok is distinctly related to have led a colony into Nipal from China: for Sirsha Parvata is said to be situated in China, meaning probably Bhote. The making Manja a Dhyani or Celestial Bodhisatwa is a mere trick of modern superstition. The town of Manj Pattan founded by Manja has perished, but tradition still gives it a locality half way between mount Sambhu and the Paspati wood, and tradition is countenanced by the fact, that at this day quantities of building materials are often dug up on the assumed site of the town.

24. May Abjapani, the chief followed by Hayagriva, Jatadhari lokeswara, and the rest, who came from Sukhavati Bhavan, then proceeded to the mountain Putala, and being thence called by the Raja Deva Huta to remove accumulated evils, was established with many rites in Lalitapur, be propitious to us all. I adore him.

25. Hayagriva (said to be the same with Bhairava) Jatadhari and the rest read Abjapani's (Padma Pani) warders and menials. The names of the rest are

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| 1. Sudhana Kamara. | 6. Akalmritya. |
| 2. Ajita. | 7. Jaya. |
| 3. Aparajita. | 8. Vijaya. |
| 4. Marsainya. | 9. Abhaya Prada. |
| 5. Varada. | 10. Dhanada |

The Buddhargy legend here alluded to is not supported by the authority of any of the Bouddha scriptures of Nipal, but rests on mere tradition. Abjapani is universally identified with Padma Pani, the fourth Dhyani Bodhisatwa. The application of the name and attributes of the Yogeswara Matsgendra Nath to this Deity is a corruption introduced by the Siva Margi Newars, and scouted by the Bouddhas in whose hands exclusively is the ministry of Abjapani's idol. The Bouddhas, however, have no objection to the Siva Margi Newars, and even Brahmanical Goorkhas making *offerings* to Padma Pani under any name they please, and in fact, all orders and sects unite in swelling the Yatra or procession of this Deity. The Bouddha tradition says, that upon the occurrence of a dreadful famine, Narendra Deva, a Raja of Bhatgong and Baudhudatta, a Vajra Acharya of Pattan, invited Padma Pani to Nipal. A quaint distich familiar to the learned Bouddhas fixed the date of Padma Pani's arrival at 1382 years from the present time. This subject is worthy of more attention than I have yet given it. By due pains (and they shall not be wanting) I hope to procure hereafter some written account of this event.

Notice of two Marmots inhabiting respectively the plains of Tibet and the Himalayan Slopes near the Snows, and also of a Rhinolophus of the central region of Nepal. By B. H. HODGSON, Esq.

1. *Arctomys Himalayanus* of Catalogue. *Potiús, Tibetensis* hodie. Mihi. Structure typical. Tail not exceeding in length one-fourth of the body and head. Molars five-four, first above unicuspid and cylindrical in its body and tuberculous on the crown: the rest double, low, flat and rather hollow crowned, but with a slight heel on the inner extremity (towards the tongue,) and a groove between two transverse ridges towards the cheek. Pelage of two sorts; hair and wool: hair the more copious, straight, elastic, adpressed, rather harsh, an inch one-

eighth to one and a quarter long: wool wavy, a third less long, not found on the body below, or tail, or head, or limbs. Hair triannulate from the base, with dusky brown and yellow (of a canescent rather than rufescent cast) and black, the last ring much the shortest, and found only on the upper surface of the body: the woolly fur biannulate only, wanting the dark tips of the hairs. General external hue, a sub-rufescent cat-grey: beneath from chin to vent yellow: limbs and cheeks the same, but deeper toned and inclining to rufous: bridge of nose and last two inches of tail, dark brown. Twenty-two to twenty-four inches from snout to vent: tail with the hair, five and a half to six and a quarter. Palm and digits (exclusive of the nails) three and a quarter: Planta, ditto ditto, three and six-sixteenths. Sexes alike, and of nearly equal size.

Habitat Tibet. Social and gregarious.

2. *Arctomys Hemachalanus*, Mihi, Structure typical, but the digits furnished with a basal membrane. Tail exceeding a third of the length of the animal. Molars five-four, the first in upper jaw as in the last: the rest transverse and having their broad crowns sulcated round a horse-shoe ridge, in lower jaw cupped between four tubercles placed at the angles of each tooth. Pelage softer and fuller than in the above, of two sorts, or hair and wool, and nearly in equal quantities. Hairs straight, fine, elastic, and about one inch long; wool wavy and two-thirds only the length of the hair. Both hair and wool triannulate from the base with dusky, rufescent, and black and nearly in equal proportions, the dark tips being ample wherever they exist, that is, on all the superior surface of the body and head, but not on the belly, nor limbs, nor sides of the head, nor ears; general colour dark grey with a full rufous tinge which is rusty and almost ochereous red on the sides of the head, ears, and limbs, especially in summer. Bridge of nose and last inch of the tail dusky brown. Head and body above strongly mixed with black, which hue equals or exceeds the pale one on those parts. From snout to rump twelve to thirteen inches. Tail five and a quarter to five and a half. Palma, less than the nails, two and three-sixteenths. Planta, ditto ditto, two and fifteen-sixteenths. Sexes alike, and of nearly equal size.

Habitat the Himalaya with the Bhote pergannahs or Cachâr in the immediate vicinity of the snows. Social and gregarious.

Remarks.—I cannot doubt that the above two species are distinct, because the Trans-Himalayan animal is nearly twice as large as the Himalayan, and possesses a proportionately much shorter tail, not to dwell on the difference of habitat, which however seems to be invariable. In structure and in manners the two species, for the most part, correspond entirely, and the difference of colours is chiefly in intensity of hue.

Many years ago I possessed, alive, a specimen of the larger or Tibetan species of Marmot, which was as tame as a rabbit, and lived at large in the house. I have lost my notes on it, but recur to the fact, lest any one should tax me with multiplying species incautiously. I cannot now doubt, on full consideration, that the larger and lesser species are distinct; and I may add, that in my old specimen of the larger one, the crowns of the cheek teeth are nearly levelled by attrition. I have recently had two or three of the lesser species alive for months in my garden. The last lived above a year and quarter with me, when it died of an accidental wound. These individuals dwelt together in amity, were very somnolent by day, more active towards night and in warm weather, but did not fall into a permanent sleep in the cold season, perhaps because they were regularly exposed to the sun in the day time. They were fed on dry grains and on fruits, such as pears, pomegranates, and plantains. They slept rolled into a ball and buried in the straw, with which their case was amply supplied. Over their meals they would frequently chatter a good deal in a very audible tone, but were usually quite silent. They were very tame and gentle for the most part, but would sometimes bite and scratch like rabbits, uttering a somewhat similar cry. On foot they are by no means active, though more so than the *Rhizomys*. Nor are they very prone to digging, but will slowly excavate a subterranean abode for themselves if permitted. Their structure is plantigrade, but of the ambulatory, not fossorial or scansorial modification of that type; and, whilst their massive heads and jaws and powerful incisors indicate immense power in reaching, as well as masticating their food, their talons exhibit no development of the pre-eminent digging type. The following particulars of the external and internal organization of the lesser species will probably prove acceptable to the real students of Zoology. Head large, massive, conico-depressed, with eyes and ears equally and considerably remote

(1½ inch). Culminal line of the head considerably arched along the nasal bridge, at the end of which the curve is lost in the prominence of the orbits, and subsequently in the fatness of all the cerebral part of the head, muzzle nude in front only, and not grooved. Upper lip not cleft, but full and incurved to the sides, so that the inside or palate is partially hairy. Lower lip very short and adpressed, nares short, ovoid, scarcely angulated or turned to the sides. Incisors very strong, white, rounded anteaally, the upper pair directed nearly downwards, the lower pair forwards in a small crescented curve from the bases, where a large mass of gland is found on dissection, but no cheek pouch. Molars five-fourths, the first above unicuspid, and furnished with one tubercle on the subconic crown: the rest with broad transverse crowns, either cupped between four tubercles at the corners, or sunk within a horse-shoe ridge, the ends of which point to the cheek. Mustachios longish reaching to ears, not rigid, but very elastic. A similar but smaller tuft on each cheek, and above and before each eye, and others still smaller on the chin and behind the carpus, as well as before it or in front of the arm. Eyes medial, midway from snout to ear, pupil oblong. Ears small, erect, rounded, as broad at top almost as below, and very simple in structure, or devoid of all membranous processes. Helix inflected anteaally, but not fissured posteaally, and moderately clad, inside and out, as far down as the conch, the longest hairs forming a fringe along the upper margin, but *not* so that the ears can be called tufted. Body full, moderately elongated: Abs medial, plantigrade, ambulatory, of moderate subequal strength before and behind. Fore-arm about as long as the hand, including the wrist and nails. Palm wholly nude, soft, pretty full with two large subtrigonal basal or carpal pads, the inner of which supports and envelopes the rudimentary thumb, which has however its tip free and furnished with an andromorphous nail. There are three round terminodigital balls for the four fingers which are gradated as in man's hand, but have their bases connected by a distinct crescented membrane. Behind the digits are about as long and as stout as before, and are similarly connected by membrane, but the fifth digit or thumb is here fully developed and free, as long proportionately as in our hand, but rather feebler than the other digits, and having like them an anteaal, not antagonistic position. The sole is nude to the heel, and about twice as long as the longest digit, soft and

smooth, with four proximate roundish balls for the bases of the five digits, and two small vague ones for the metatars placed subcentrally as to the entire length of the planta, and transversely in the same line. The tail without the hair is about half the length of the body without the head. It is not thick at the base, and thence gradually tapers, being rather fuller of hair than the body, and the hair exceeding the tail itself by about one inch, where it forms a blunt termination.

The anal and genital parts are void of any peculiar glands or pores. In the females the teats are twelve, and extend from the armpits to the back of the groins. In one specimen I find but ten mammae: the larger species has twelve decidedly. The talons have the general character of those of our *Mesobema*, [olim *Urva*], being of medial subequal size, hardly larger before than behind, moderately compressed, rounded above, and scooped below towards their blunt extremities. The intestines in one specimen (female) measured ten feet and four inches: in another (male) eight feet and a half, and in the former the stomach along the greater arch was five inches and a half, and along the lesser two inches, while in the latter it was only four by one and a half. In the female, whose intestinal canal was ten-four, the cæcum was found at three-two from the anal, and was two inches long by one and a half in diameter, cylindric in shape and curved lunately as it lay in situ. The larger gut was one inch wide, and the lesser half that width. The stomach was purely membranous and (as flatted on a table) of an attenuate pyriform shape, having the upper orifice terminal, and the lower remote from it, but so as to leave a good sized fundus.

N. B.—There is a prior description of the large Marmot in the *Journal*, Vol. X, p. 777.*

* In Mr. Ogilby's 'Memoir on the Mammalogy of the Himalayas,' published in Dr. Royle's Volume on the Botanical productions of that immense range, we read that — 'Dr. Falconer, in the report of his recent journey to Cashmere and Little Tibet, mentions a rodent under the name of the Tibet Marmot, which he says was first found on a bleak and rocky tract of country, immediately after passing to the northern slope of the great Himalayan range; but we have no further knowledge of its characters: however, this is precisely the locality in which mammals of this description might naturally be expected to abound.'

It is not improbable that the *Lepus hispidus*, Pearson, described in the 'Bengal Sporting Magazine,' as quoted by Dr. McClelland in *Proc. Zool. Soc.* for 1839, p. 152, should also be referred to this genus: I hope to be soon able to procure specimens of it.—*Cur. As. Soc.*

3. *Rhinolophus Perniger*, Mihi. Structure typical. Inguinal teats, distinct large cup-shaped frontal sinus. Tongue considerably extensible, fleshy, full, smooth anteaally, subpapillate towards the gullet, nose-plate spreading amply to sides, and exceeding the edge of the upper lip, flat and free all round the margin, merely membranous, furnished with two salient processes, whereof the lower or anteaal one is like a door-knocker, and the upper or posteaal, a graduate spire. Ears very large, much longer than the head, shaped like a broad acutely pointed leaf, transversely striate, nude save at base, their fine points slightly drooped; the false or inner ear semicircular in form, and anteaally much attached to the cheek, so as to fold over the orifice of the auditory passage, where it doubles upon the anteaal part of the helix. Tail six-jointed, shorter than the body, and its full membrane squared nearly between the spread radii or metatarsal processes. Wings ample: thumb free and furnished with a nail: first finger one-jointed and no nail; the rest three-jointed and unarmed. Fur longish, very soft, lax and slightly curled. Colour uniform black, embrowned on the nude cutaneous parts, slighted tipped with silver on the back. Snout to rump three inches and a quarter (female,) tail two and one-eighth; head one and five-sixteenths, expanse seventeen; ears from anteaal base one and eleven-sixteenths, from the crown of the head or posteaal base one and six-sixteenths; fore arm two and five-eighth; second or longest finger four; leg or tarse one and three-eighth; foot from os calcis to end of talons thirteen-sixteenths.

Habitat, the central region of the Sub-Himalayas: shy: never approaches houses or the cultivated country: dwells in the deep forests and caves of the more precipitous mountains. [Mr. Hodgson has sent some other spieces of this genus, with descriptions; but as the Society expects shortly to receive from Europe M. Temminck's Monograph of the *Rhinolophi*, I deem it better to await the arrival of that treatise on the group, before venturing to determine Mr. Hodgson's and some other species of Horse-shoe Bats in the Museum.—*Cur. As. Soc.*]

Nepal, February, 1843.

B. II. HODGSON.

*Proceedings of the Asiatic Society.**Wednesday Evening, 3rd May, 1843.*

The Honourable W. W. BIRD, President, in the Chair.

Captain GOODWYN and Lieut. STRACHEY, of the Corps of Engineers, proposed at the last Meeting, were ballotted for and duly elected Members of the Society.

Ordered.—That the usual communication of the election be made to Capt. GOODWYN and Lieut. STRACHEY, and that they be furnished with the rules of the Society for their guidance.

Messrs. BRANDRETH and CUST C. S. were proposed as Members of the Society by the Honourable the President, seconded by Sir W. H. SELTON.

Library.

The following Books were laid before the Meeting :—

Books received for the Meeting of the Asiatic Society, on the 3rd May, 1843.

The Oriental Christian Spectator. Bombay, April 1843. Second Series. Vol. iv, No. 4. Presented by the Editor.

Proceedings of the London Electrical Society, 1842-3, pts. 5th and 6th. Presented by the Society.

London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science. 3rd Series. December 1842. Vol. xxi, No. 140.

Annals and Magazine of Natural History. London, November 1842. Vol. x, No. 64.

Statistiske Tabeller for Rongeriget Norge 1er till 5e. Reekke irreg. (Tableaux Statistiques sur la Norvège. Série 1er, 5e.) Presented by the University of Christiania.

Nyt Magazin for Naturvidenskaberne 11 Hefter (Nouveau Magazin pour les Sciences Naturelles, publiée par la Société Physiographique à Christiania, 11 Cahiers). Presented by ditto ditto.

Lærebog i Mechaniken of Chr. Hansteen, 2 bande, (Cours complet de la Mécanique, par le Professeur C. Hansteen, 2 tomes). Presented by ditto ditto.

“Heimskringla” eller Snorre Sturlesons Norske Kongers Sagaer med 3de, Karter og fure Slaalsteb, (Chroniques des Anciens Rois de la Norvège, par Snorre Sturlesons, édits par T. Aall, avec Cartes et beaucoup de Planches). Presented by ditto ditto.

Abels Varker, 2 bande, (Œuvres complètes du Mathématicien Norvégien, N. H. Abel, rédigées par ordre du Roi, par le Professeur B. Holmboe). Presented by ditto ditto.

Descriptio Ornamentorum Aurcorum et Nummorum in Norvegia Repertorum, 1825, scripsit C. Holmboe. Presented by ditto ditto, (2 copies).

De Nummis mediæ Aevi, in Norvegia nuper Repertis particula Posterior, 1837. Presented by ditto ditto.

Aarsberetning for det Kongelige Norske Frederiks Universitets for Aaret 1840, (Annuaire de l'Université, 1840). Presented by ditto ditto.

Norges Statistik af Schweigaard. 1st deel, (Statistique de la Norvège, par Schweigaard, tome 1er). Presented by ditto ditto.

De Mutationibus Virgæ Magneticæ, Auctore Christophoro Hansteen, 1842. Presented by ditto ditto.

Index Scholarum in Universitate Regia Fredericiana, 59 ejus Semestri, 1842. Presented by ditto ditto, (2 copies).

Gaea Norvegica, 1838, Earstex Heet. Presented by ditto ditto.

Universiteterne i Christianas. Upsala, 1836. Presented by ditto ditto.

De Prisca re Monetaria Norvegicæ, scripsit C. A. Holmboe, 1841. Presented by ditto ditto.

Indby Delsesskrift i Anledning af den Høitidelige Nedlæggelse af Grundstenen til Nye Bygninger for det Kongelige Norske Frederiks Universitet Tredivaarsdagen efter dets Stiftelse den 2den September, 1841. Presented by ditto ditto.

Read letter from Mr. Officiating Secretary DAVIDSON, No. 48, of 12th ultimo, communicating the acknowledgments of the Government for the offer, by the Society, of copies of a Sindee Vocabulary about to be published under its superintendence, and stating, that twenty-five copies of the work would be sufficient for the use of Government.

Read letter from Capt. H. M. DURAND, Private Secretary to the Right Honourable the Governor General of 8th ultimo, informing the Secretary that His Lordship would wish twenty-four copies of the Sindee Vocabulary to be sent to the Government of Bombay, the like number to the Secretary in the Political Department with the Governor General, and one copy to Major Leech, C. B.

Read letter from N. B. E. BAILLIE, Esq. of 24th ultimo, accepting the office of Member of Committee of Papers, and promising to render every assistance in his power to the best of his ability.

Read the following letter from Mr. R. S. MALING, of 2nd ultimo, presenting specimen of some Oil extracted from Nuts, the produce of trees called by the Natives Nipal Ukrote.

DEAR SIR,—I beg to forward herewith a small quantity of Oil extracted from Nuts the produce of trees called by the natives Nepal Ukrote, of which I have some few in my compound. I am unable to give you the real name of the tree, but in order that you may discover it, I send you, accompanying, some of its leaves and blossom, also some of the nuts it bears. The leaves so far as I can recollect, are precisely similar to those of the Sycamore, and the tree itself resembles it very much, so far so indeed as to lead me to suppose, (until I observed the nuts it bore,) that it was the Sycamore tree. From enquiries that I have made, I learn that the full grown trees I have were planted by Mr. Clerk of the Civil Service, some 28 or 30 years back; they flourish well here, and are of speedy growth. I planted some last rainy season, which are already

five and six feet high, the tree itself is ornamental, and to shew how profitable a plantation of them would be if cultivated for the sake of the oil, I annex the following:—

Say, 40 Trees upon each Beegah,	40
Each Tree averaging 1½ maund of oil,.....	1½

60

Such oil would fetch at the least even in Calcutta, 12 Rs. }	12
per maund.	

Rs. 720 each Beegah, from which must be deducted the cost of manufacture, which, however, would in all likelihood be paid for by any crop on the same ground, such as Indigo, Mustard, &c. &c. I extracted the oil sent you by pressure, in a manner exactly similar to that in use in the manufacture of cold drawn castor oil; the nut itself I have eaten, and found very palatable, far more so I think than the walnut, and I never experienced any bad effects from eating it. The natives say it is a purgative, but I did not find it so. At the present season the tree is particularly handsome, being covered with a handsome white blossom, which contrasts well with the large dark leaf of the tree. It is my intention to send some of the young plants I have to the Agricultural Society, and I shall have much pleasure in sending you as many young trees, and as much seed as you may require.

Yours very faithfully,

Raugundee, 2d April, 1843.

W. MALING.

P. S.—You will not fail to observe the remarkable difference between the leaves attached to the blossom, and those separate, and yet they are off the same tree.

Read the following Letter and Memorandum from Captain MACLEOD, of Moulmein, of 10th ultimo, on a specimen of Black Dye, of which samples were on the table:—

MY DEAR TORRENS,

The accompanying will speak for itself, the black colour conveyed by the Dye is the most beautiful I have seen. I would write more on the subject, but the letter and the Dye have just reached me, and I fear to delay, the Steamer being on the point of starting.

Yours very truly,

Moulmein, 10th April, 1843.

W. MACLEOD.

Zimmay, February, 1843.

“I have the pleasure of sending you a specimen of the Black Dye. I made the experiment myself, and find it is produced from the pulp growing round a kind of plum of a very light colour inside, until broke, exposed to the air and sun, when it gradually assumes the intense Black Dye, and becomes insoluble in water, and must go through the same process as Indigo, both being insoluble in water. The manner of dying silk is very simple; it is immersed in a quantity of the pulp mixed with water sufficiently thin, and either dipped or rolled over the silk which immediately being exposed to the sun grows darker, and if not sufficiently dyed, this is repeated; it requires but a small quantity to dye a quantity of silk.

I shall bring down with me a piece of Long Cloth I have had dyed; the process of dying cotton is different, it is first put in a solution of Indigo, dried, and then immersed and exposed to dry, becomes entirely black. The natives keep the Indigo in solution; with

it is mixed a great quantity of lime; no boiling or hot water is used in the process. Should you have an opportunity, send the specimen to the Society in Calcutta in my name, and I will bring a box down to be sent to England, as well as some Indigo; and enquire of them, if there is any premium for the production of a Black Dye that requires no sulphate of iron.

Read the following letter from Professor HOLMBOE, of the university of Christiana.

Christiana, le 21 Sept. 1842.

MESSIEURS.

Les Directeurs de la Société Asiatique de Calcutta.

Etant informé par mon compatriote Mr. Bonnevie, que Messieurs veulent bien vous mettre en rapport avec notre Université afin d'échanger des articles scientifiques, je prends la liberté d'envoyer ci-joints 215 monnoies, dont les 160 sont de la maison d'Oldenbourg, non plus en cours, et les 55 des monnoies du 12^{me} siècle récemment découvertes, sur lesquelles j'ai publié un mémoire, dont un exemplaire est aussi ci-joint.

Possédant déjà plusieurs des monnoies, que les Anglais ont fait frapper pour les Indes, il nous serait particulièrement agréable de recevoir des pièces frappées par les princes indigènes. Sur tout il nous intéresserait beaucoup de recevoir de celles, qui passent sous le nom de Indo-scythiques ou Indo-bactriques, et dont Messieurs Masson et Honigberger ont trouvé de grandes quantités dans l'Afghanistan.

Veillez agréer l'assurance de la parfaite considération avec laquelle j'ai l'honneur d'être,

Messieurs,

Votre très humble et très obéissant serviteur,

F. HOLMBOE,

*Professeur des Langues Orientales à l'Université
Royale de Christiania, et Directeur de son Cabinet de Médailles.*

Read the following letters, giving cover to papers for publication in the Journal of the Asiatic Society; viz. of 21st April, from Mr. Officiating Secretary DAVIDSON, with a Report by Mr. Commissioner LUSHINGTON, on the results of the mining experiment conducted at "Pokhree in Gurhwal."

Of 15th April, from Capt. H. M. DURAND, with a brief History of Khelat, by Major LEECH, C. B., and a Journal of a Tour through parts of the Punjab and of Afghanistan, by Agha Abbas of Sheraz, arranged and translated by Major LEECH, C. B.

Of 11th April, from E. C. RAVENSHAW, Esq. C. S. with a memorandum on the construction of a "Portable Meridian," ordered to be published accordingly.

Read letter from Mr. JAMES REYNOLDS, Secretary of the Oriental Translation Fund, dated London, 14th February 1843, requesting remittance of the subscription of the Asiatic Society for 1842 and 1843, amounting to £21.

The remittance ordered to be made by a set of bills.

The Secretary presented to the Society sundry Fire Arms of the manufacture of Lahore, Cabool, and various places of Hindoostan, being as follows :—

Dokh, or Hindoostanee cut-and-thrust Sword.

Two Peshawur Firelocks, mounted after the Native and English fashions, lock made by Cashmeeree Gunsmiths of Loodiana to imitate Tower locks.

A Gun.

A Lahore Matchlock, purchased from one of Runjeet Singh's *Ghorchurras*.

Knife used by the tribes about the Khybur Pass, as Afreedees, Momunds, &c.

A small box, containing some dust of the Sandal-wood gates of Somnath was also presented, and examined by the Members. The impression was general, that the gates were really of Sandal-wood. A copy of the Inscription and the Report of the Committee of Engineer Officers had been sent with the box, but had been sent off for early insertion in the Journal without any copy being retained. The drawing of the gates had not yet reached the Secretary's hands. The subject was therefore ordered to be again brought to notice at the next Meeting.

Read the following Report from the Curator of the Museum of Economic Geology, for the month of April last :—

Report of the Curator Museum Economic Geology for the month of April.

Museum Economic Geology.—We have completed searching out and arranging our Indian Copper Ores, and the collection comprising 72 specimens from Kemaon, Gurhwal, Nepal, Shekawattee, Ajmere, Nellore, and Ramree is now upon the table. Much is yet wanting to complete this series, but we shall no doubt soon receive contributions. Mr. Commissioner Lushington's report on the Government experimental working of the Kemaon mines, which is presented this evening from Government, is a highly valuable record for future guidance, but we may remark upon it, that the outlay and the depth penetrated are trifling when compared with mining adventures in Europe, so that rich beds or veins may still remain to be reached by future adventurers in this locality.

Mr. Blundell, Commissioner, Tenasserim Provinces, has sent us an interesting paper, with specimens, being an analysis by Dr. Ure of London of the Magnetic Iron Ores and Limestones of Tavoy, which are upon the table. His letter is as follows :—

Moulmein, 7th April, 1843.

MY DEAR SIR,—Having last year sent home some specimens of the Iron Ores of these Provinces, I have lately received a chemical analysis of them by Dr. A. Ure, and thinking they might prove acceptable in the Museum of Economic Geology, I now beg to forward to your address, a box containing similar specimens.

Inclosed is a copy of the memorandum which accompanied the specimens I sent to England, and of Dr. Ure's report on them.

The box is on board the Honorable Company's Steamer *Hooghty*, and will be delivered to you by Captain Ross.

Yours truly,

G. H. BLUNDELL.

From Captain Newbold, M. N. I. Assistant Commissioner of Kurnool, we have to acknowledge a specimen of a remarkable barren soil from that part of Southern India, the label to which best describes it.

Jauri Soil from Kurnoul, infertile, very impervious to water, used for flat roofs of native houses in Kurnoul as a protection against rains.

I have not yet been able to examine this soil, but it is remarkably like one from Cheduba brought by Captain Halsted, also quite infertile, and is probably like it, rendered so by being almost a pulverulent Iron Ore, rather than a soil.

Geological and Mineralogical.—We have received from the University of Christiana, in addition to several valuable works noticed in the Librarian's report, a small but valuable series of Fossils and Geological and Mineralogical Specimens, in all 50 in number, which are on the table. Of these, the Fossil and Geological Specimens are entirely new to our collection, but some few of the Mineralogical ones we already possessed. It is to the exertions of Captain Bonnevie of Tirhoot, a member of that University, that the Society is indebted for this very handsome donation, which it will be our duty to return in the best manner we can, and by the earliest opportunity. Captain Bonnevie's letter is as follows:—

To the Secretary of the Asiatic Society, Calcutta.

SIR,—It is about nine months since, at the suggestion of Mr. Blyth, I wrote to the University of Christiana in Norway, proposing an interchange of natural productions and scientific works between that body and the Asiatic Society. I have now the honor to enclose a letter, with accompanying lists of articles sent by the University, and beg to inform you, that the packages shall be forwarded to the Society immediately on their arrival.

I have been requested to inform the Society, that in the list of minerals, the "Acmite" Crystal, No. 35, is now very scarce, as the spot where it is found is becoming exhausted, and also, that the specimen of "Gadolinite" No. 44 is of great value. It is a very rare production, and mostly found in small pieces mixed with other substances.

The University would feel very gratified to receive in return any minerals or rare fossils peculiar to Asia, and if procurable, Casts in Gypsum of the cranium of the Sivatherium and other fossil animals of the like kind that have been discovered in this country.

In the lists of books, you will observe a work styled "De Mutationibus Virgæ Magneticæ," by Professor Hansteen. I have been requested by him to suggest to scientific men in India, to make as many observations as possible on the dip and the variation of the Needle. As the suggestion of a learned and influential body like the Asiatic Society will have weight, when those of a humble individual like myself would be deemed presumptuous; perhaps the Society will be kind enough to assist the Professor by urging these observations on its numerous scientific members scattered over India.

I have the honor to be, Sir,

Your most obedient servant,

C. S. BONNEVIE.

RUNGPORE,

The 19th February, 1843.

Mr. Frith has kindly sent us a curious specimen of Wood reduced to brown Coal and Lignite, which was taken from a well now digging at Dum-Dum by his father.

H. PIDDINGTON,

Curator, Museum Economy Geology

For all the Presentations, the thanks of the Society were accorded.

NOTICE.

A mistaken impression having gone abroad respecting the high rate of subscription said to be required from Members of the Asiatic Society of Bengal, the Committee of Papers desire specially to note that the total subscription entitling a Member to all the usual privileges as hereinafter noted, is *sixty-four rupees a year, or five rupees five annas a month.*

Rules of the Asiatic Society.

The following is an abstract of the Rules of this Institution which are now in force, including those printed in the Appendix to the sixth and subsequent Volumes of the Society's Transactions.

Original Rules adopted from the Founder's Discourse 15th February, 1784.

1.—The Institution shall be denominated the Asiatic Society, the bounds of its investigations will be the Geographical limits of Asia, and within these limits its enquiries will be extended to whatever is performed by man or produced by nature.

2.—Weekly meetings shall be held for the purpose of hearing Original Papers read on such subjects as fall within the circle of the Society's enquiries.

3.—All curious and learned men shall be invited to send their Tracts to the Secretary, for which they shall immediately receive the thanks of the Society.

4.—The Society's Researches shall be published Annually, if a sufficiency of valuable materials be received.

5.—Mere Translations of considerable length shall not be admitted except of such unpublished Essays or Treatises as may be transmitted to the Society by Native Authors.

6.—All questions shall be decided on a Ballot, by a majority of two-thirds, and nine Members shall be required to constitute a Board for such decisions.

7.—No new member shall be admitted who has not expressed a voluntary desire to become so, and in that case no other qualification shall be required than a love of knowledge, and a zeal for the promotion of it.

Subsequent Resolutions of the Society which are in force.

8.—The future meetings of the Society shall be held on the first Wednesday of each alternate month, viz. in the months of February, April, June, August, October, and December, at nine o'clock in the Evening.

9.—If any business should occur to require intermediate meetings they may be convened by the President, who may also, when necessary, appoint any other day of the week, instead of Wednesday for the stated meetings of the Society.

10.—As it may not always be convenient for the President, to attend the meetings of the Society, a certain Number of Vice Presidents shall be elected annually.

11.—In case the President and the Vice Presidents are absent at any meeting, a quarter of an hour after the fixed time, the Senior Member present shall take the chair for the Evening.

12.—Every Member of the Society shall have the privilege of introducing as a Visitor, any Gentleman, who is not usually resident in Calcutta.

13.—With a view to provide Funds for the necessary expences of the Society, an admission Fee shall be established to consist of Two Gold Mohurs, payable by every member on his Election, and each member of the Society resident in India (Honorary Members excepted) shall also contribute a Gold Mohur quarterly in the first week of January, April, July, and October, any member neglecting to pay his Subscription for half a year, after it becomes due, to be considered as no longer a Member of the Society.

14.—All Members returning to India, shall be called upon to pay their Subscription as usual from the date of their return.

15.—A Treasurer shall be appointed.

16.—In addition to the Secretary, an Assistant Secretary, and a Librarian shall also be appointed.

17.—A Committee of Papers shall be appointed, to consist of the President, Vice Presidents, Secretary, and nine other Members to be elected annually, and any number no less than five shall be competent to form a Committee.

18.—This Committee will select from the Papers communicated to the Society such as may appear proper for publication, and superintend the Printing of the Society's Transactions.

19.—The Committee of Papers shall be authorized to draw upon the Treasurer for any sums requisite to defray the expense of publishing the Transactions, and an order signed by a majority of the Committee, will be a sufficient warrant to the Treasurer for paying the same.

20.—The Committee of Papers is authorized to defray any small contingent expenses on account of the Society, which they may deem indispensable.

21.—Every Subscribing Member of the Society, on application shall be furnished with a Copy of such Volumes of the Researches as may be published whilst he continues a Member in return for his contributions, without any further payment.

22.—With a view to the more general circulation of the Asiatic Researches in India, the price of the 12th and future Volumes to Non-Subscribers, shall be fixed at a Gold Mohur, and if several Volumes of different years be purchased together they shall be sold at 10 Rupees each.

23.—The Agents of the Society in England shall be desired to purchase, and forward for the Society's Library, Books of Science and Oriental Literature published in Europe, taking care that those purchases at no time exceed the Funds arising from the sale of the Society's publications.

24.—The Committee of Papers shall be requested to furnish the Agents in Europe with such further instructions as may appear requisite for their guidance in the selection of Books proper to be placed in the Library of the Society.

Library.

25.—The Library is open from 10 to 4 o'clock, between which hours the Native Librarian is to be in attendance every day, Sunday excepted.

26.—None but the members of the Society are allowed to borrow Books from the Society's Library and no Book is to be lent out of Calcutta, without especial permission from the Committee of Papers.

27.—Books are to be borrowed by written or personal application to the Secretary, in either case the person applying is to furnish a written receipt specifying the name of the Work, and the time for which it is borrowed, at the expiration of which, he is to return the Book borrowed, or renew his application for an extended loan of it.

28.—The receipts for the Books shall be filed and a record kept of the Books lent out to whom and when lent out, and when returned.

29.—A list of the Books in the library, and a Register of those lent out, are to be kept ready for inspection.

30.—All persons borrowing Books, are to be answerable for their safe return, or are expected to replace them if injured or lost.

Museum.

31.—On the 2nd February 1811, the Society determined upon forming a Museum for the reception of all articles that may tend to illustrate Oriental manners and History, or to elucidate the particulars of nature or art in the East. The following Resolutions were at the same time passed upon the subject

32.—That this intention be made known to the Public, and that contributions be solicited of the undermentioned nature.

1. Inscriptions on Stone and Brass.
2. Ancient monuments, Mahomedan or Hindoo.
3. Figures of the Hindoo Deities.
4. Ancient Coins.
5. Ancient Manuscripts.
6. Instruments of war peculiar to the East.
7. Instruments of Music.
8. The vessels employed in Religious Ceremonies.
9. Implements of Native Art and Manufacture, &c. &c.
10. Animals peculiar to India, dried or preserved.
11. Skeletons or particular bones of Animals peculiar to India.
12. Birds peculiar to India stuffed or preserved.
13. Dried Plants, Fruits, &c.
14. Mineral or Vegetable Preparations in Eastern Pharmacy.
15. Ores of Metals.
16. Native Alloys of Metal.
17. Minerals of every description, &c. &c. &c.,

33.—That the Hall on the ground floor of the Society's House be fitted up for the reception of the articles that may be procured. The Plan and expenses of so doing to be regulated by the Committee of Papers and Secretary, and the person under whose superintendence the Museum may be placed.

34.—That the expense which may be incurred in preparing materials furnished in a state unfit for preservation be defrayed by the Society within a certain and fixed extent.

35.—All articles presented to the Museum shall be delivered in the first instance to the Superintendent of the Museum, to enable him to make the acknowledgement directed in the standing rules of the Society.

36.—A Register of Donations to the Museum, shall be exhibited at each Meeting of the Society

37.—The Committee of Papers shall adopt such means as may appear proper for making the intentions of the Society, in this respect, generally known.

38.—That the names of persons contributing to the Museum or Library of the Society, be hereafter published, at the end of each Volume of the Asiatic Researches.

Bibliotheca Asiatica.

The following Resolutions were passed on the recommendation of the Committee of Papers, under date the 2nd July 1806, but materials have not yet been received for publishing a Volume of the work therein proposed.

39.—That the Society publish from time to time as their Funds will admit of it, Volumes distinct from the Asiatic Researches, translations of the works in the Sanscrit and other Asiatic Languages, or Extracts and descriptive accounts of Books of greater length in those Languages, which may be offered to the Society, and appear deserving of publication.

40.—That as this publication may be expected gradually to extend to all Asiatic Books of which copies may be deposited in the Library of the Society, and even to all works extant in the learned Languages of Asia, the Series of the Volumes, be entitled *Bibliotheca Asiatica*, or a Descriptive Catalogue of Asiatic Books with Extracts and Translations.

Physical Class.

The following Resolutions were passed on the 2nd January 1828.

- 1.—That the Physical Committee of the Asiatic Society be considered as in existence, and for the same purposes as formerly, exclusively of medicine.
- 2.—That all Members of the Society, be Members of the Committee.
- 3.—That persons not belonging to the Society, may be elected as corresponding Members of the Committee, upon the recommendation of any three Members without being liable to any charge.
- 4.—That the Committee elect its own Officers.
- 5.—That the Committee frame its own rules, subject whenever likely to interfere with the rules of the Society, to confirmation at a General Meeting.
- 6.—That the Proceedings of the Society and short notices of any interest be published from time to time as they accumulate in such form as may be hereafter found convenient.
- 7.—That Papers of any extent or permanent interest be published in the same type and form as the Researches, so as to admit of their being bound up with them.
- 8.—That the expence of these publications be borne by the Society
- 9.—That the Physical department of the Museum be considered under the especial charge of the Committee, Mr. Tytler undertaking the care of the Osteological Specimens, and Mr. Ross of the Minerals.

Translation Committee, 3rd September 1828.

That a Committee of the Society be formed to communicate with the Committee of Translations of the Royal Asiatic Society and carry their views into effect, by procuring and transmitting such Manuscripts, Originals and Translations as they may be able to obtain for the purpose.

That a Book be opened for Subscriptions of ten Guineas per annum, each Subscriber entitling him a copy of all the Works printed by Translation Committee.

JOURNAL

OF THE

ASIATIC SOCIETY.



Report of a Visit to the Pakchan River, and of some Tin localities in the southern portion of the Tenasserim Provinces. By Captain G. B. TREMENHEERF, F. G. S. Executive Engineer, Tenasserim Provinces. With a Map and Section of the Peninsula.

1. The boundary between our provinces and the Siamese territory at the south and western extremity of Tenasserim, has never been distinctly defined.

After a correspondence with the Court of Bangkok, it had been arranged that an agent on their part should meet Mr. Commissioner Blundell on the Pakchan river on the 1st of March, where evidence was to be heard on both sides, and the question finally settled. The departure of the Commissioner from Maulmain was unavoidably delayed till the 4th of March. At Mr. Blundell's request, I formed one of his party in the H. C. Steamer *Hoogly*, and touching at Amherst and Mergui, entered the Pakchan river on the 10th of March.

2. The entrance is about two miles wide, affording ample room and deep water for the admission of ships of the largest burthen. The numerous islands which range along either shore of this fine river, and the bold hilly country beyond, afford views which would be thought picturesque in any country. For the first ten miles it is very slightly contracted in breadth, and has little of the character of a river, but of a capacious inlet of the sea. To this distance we carried not less than four fathom water, but, for the most part six and seven. After proceeding thus far, we turned into the Malewan river, and anchored at about

one and half mile in a N. W. direction, for the purpose of communicating with the British Settlement of that name. The next day, proceeding eight miles higher up the main river, we anchored in three fathoms abreast the confluence of the great Kaman river, beyond which the channel being much contracted by sand banks, the Steamer could not proceed. From thence we moved in boats, and arrived at Pakchan in eight hours; the distance as surveyed by Captain R. Ross, commanding the *Hoogly*, being thirty miles. The river narrows gradually, and from the great Kaman, passes through level country; approaching Pakchan, hills again appear, and it becomes very tortuous, at which spot it is about 50 yards broad, with a rise and fall of tide of eight feet at the springs.

3. The governor of Pakchan, a Chinaman, informed Mr. Blundell, that the chief of Peechapooree, who had been deputed by the Siam government to meet him, had arrived at Pakchan punctually on the 1st of March; after waiting ten days, he had retired to Chimpohun, on the plain of the east side of the peninsula. It was therefore determined that Dr. Richardson, Assistant to the Commissioner, should go to the chief and invite his return to the projected conference: accordingly, Dr. Richardson and myself, with a few of our own followers, commenced our journey on foot a little after 5 A. M., the prospect of crossing the peninsula being an object of peculiar interest.

Following generally the course of a small stream called the Kraa, which joins the main river at Pakchap, we proceeded by a good and clear road of ten to fifteen feet wide through the jungle towards the Kraa Pass, distant three miles in a N. E. direction. The road here turns to the South of East and the Pass, which is not intricate, leads for some distance along the bed of the rivulet, and terminates to the South-East at six and five-sixth miles from Pakchan. Here the greatest altitude is attained between the valley of the Pakchan and the alluvial plains on the east side of the peninsula, for soon after, at eight hours and seven minutes A.M., we came upon the waters of the Chimpohun, running in an easterly direction towards the gulf of Siam, the country then begins to slope gradually to the East; at eight hours thirty-seven minutes A. M., we halted two hours for refreshment by the side of the Chimpohun, at a spot where there are three or four houses, having the name of Bantapakchan. We here observed a canoe, which can be floated to

Chimpohun during the rains, and if necessary, to the gulf itself. From thence the road continues good. It crosses the Chimpohun very frequently, besides many dry ravines which communicate with it; the banks of these, where crossed by the road have not more than thirty or thirty-five feet of abrupt declivity, the rest of the ground being very regular, and partaking of the general slope of the country. At 3 p. m., having walked seventeen and half miles, we fell in with an elephant, and inducing the driver to take us on, were relieved from further personal exertion. The first eight miles of the eastern slope of the Pass have the greatest fall, after which the descent is easy till we reach the alluvial plain of Chimpohun. Nearing this plain, at 5 p. m., we observed the influence of the tide in the river, and at 5-30 reached Chimpohun. The plain is covered with rice fields, bearing signs of abundant crops as far as could be observed on all sides, and is bounded by a range of hills bending in a curved direction to the South-East. Some of these near the plain have much the same isolated and abrupt character, as the limestone hills near Maulmain. After half an hour's delay, the headman forwarded us on fresh elephants to the camp of the chief, which we found at Tasapaow, three and half miles distant further East, and reached it at 8. p. m., the entire distance between Pakchan and Tasapaow, being nearly twenty-eight miles.

4. We were here hospitably treated, and visited the chief early the following morning. After a slight dinner, Dr. Richardson succeeded in inducing him to return and confer with Mr. Blundell, whom he expressed himself anxious to meet. His encampment was on the right bank of the Chimpohun, where the river is about 180 yards broad, running through a level country over a sandy bed, free from obstructions, and with a rise and fall of tide of about six feet at the springs. The depth of water at 8 a. m. on the 13th of March, was six feet with a rising tide. It communicates directly with the gulf of Siam, from which, by the best information, we were distant five miles. A sea-going boat of about thirty tons was under a shed at this spot; but junks trading on the Siam coast do not pass beyond Tayang, a town four miles East of Tasapaow, and within a mile of the sea. Time would not admit of our going to the coast, as Mr. Blundell and the rest of the party were expecting our speedy return to Pakchan. The distance of Tasapaow from the sea, as above given, may I think

be relied on, having been obtained from one of our own people who had formerly resided some time at Chimpohun. The protraction of my route also, with these five miles added, makes the East coast of the peninsula correspond, within one mile short, with its longitude by Horsburgh's chart. The distance therefore between Pakchan and the coast of the gulf of Siam is thirty-two miles, and the entire breadth of the peninsula at this point from the Bay of Bengal to the gulf, is as nearly as possible sixty miles.

5. After receiving the chief's return visit, elephants were provided to take us back to Pakchan; we started at 11 A. M. and halted for the night on the Chimpohun river at a shed about half way, named Tacumlae, and reached Pakchan the next day, 14th March, at 2 P. M. On the way back, I paid particular attention to the inclination of the country, with the view of forming a probable estimate of the elevation of the top of the Kraa Pass, where the head waters of the Kraa and Chimpohun rise, and I am of opinion, that the difference of level between that point and the plains at Chimpohun and Pakchan does not exceed 450 feet. Along the entire route between these two places, or twenty-three miles, running water was crossed thirty-two times, besides which, there are numerous dry nullahs before mentioned, which would be occasionally unfordable during the rains.

The road is never more than 100 feet above the bed of the river-course; it has an easy slope, and except at the crossings of the streams and nullahs, is now passable by guns; but no part of the road would during the dry season present any difficulty to the passage of an army.

6. Some speculations having appeared lately in the columns of the *Moulmain Chronicle*, on the practicability of carrying a canal across the Isthmus of Kraa, whereby ships might pass by a short route from India to China, instead of round the Malayan peninsula, I am induced to offer some observations, under the idea, that enquiries on the subject might probably be made at some future period.

From the tidal waters of the Pakchan flowing westward to the Bay of Bengal, to those of the Chimpohun running eastward to the Gulf of Siam, I paid as much attention to the slopes and facilities for such a work as the nature of our journey allowed, and while no work of this description, where the physical difficulties are not absolutely insurmountable, ought perhaps to be pronounced impracticable, I have no

hesitation in saying, that the scheme alluded to, is not in my opinion reasonably practicable.

On a rough estimate, I assume 450 feet as the greatest rise of ground between the two seas, and if we suppose the line of road to be 100 feet above the level of the bed of the water-courses of the Pass as they now exist, and deduct that from the above, it will leave 350 feet of excavation, chiefly in solid rock, to be effected at the head of the Pass, to which the depth of the ship channel would remain to be added.

As no ships could come higher up than the second anchorage of the Hoogly, or 25 miles in a direct line below Pakchan, the length of the canal would be increased by that distance, as well, in all probability, by the five miles beyond Tasapaow, as the rivers on that side of the Peninsula are known to be generally obstructed by bars of sand. Both the Kraa and Chimpohun rivers are very small streams at this season, running over rocky beds, and no supply of fresh water could, I think, be depended on from either, to feed such a canal, or that would be sufficient at any period of the year to supply the loss by absorption and evaporation. An approximate section of the ground is given on the accompanying plan, by which it will appear, that the probable cutting for such a canal, supposing its width 100 feet and of rectangular form, would be on the lowest calculation as follows:—

	<i>Length.</i>	<i>Breadth.</i>	<i>Depth.</i>	<i>Cubic Feet.</i>
From the Great Kawan River to Pakchan,	25 miles	+ 100 feet	+ 60 feet	870,000,000
From Pakchan to top of Kraa Pass,	5 $\frac{5}{8}$	Do. + 100 Do.	+ 380 \div 2 =	685,520,000
From top of Pass to a spring marked in the Map, ...	16	Do. + 100 Do.	+ 380 \div 2 =	1,605,120,000
From the spring to Tasapaow,	5	Do. + 100 Do.	+ 180 =	261,000,000
From Tasapaow to the Gulf,	5	Do. + 100 Do.	+ 50 =	132,000,000
				<hr/>
				3,556,640,000 { Solid feet of Excavation,

which, supposing that one man excavated during the entire work twenty cubic feet per day, and placed it where it was eventually to remain, and that one man's labor is there worth one rupee per day, would cost eighteen millions sterling.

7. Having remained at Pakchan during the 15th, for the purpose of the conference between the Siam Chief and Mr. Blundell, which took place on the morning of that day, we left the place the same evening, and rejoined the steamer again in eight hours. On the 16th, we

dropped down to our first anchorage, and on the same day visited the settlement of Malewan, which is on a branch of the Malewan about seven miles from its junction with the Pakchan. On the flood tide, junks of twenty or thirty tons can approach it; but at low tide there is no water to float the smallest canoe.

Malewan is but a recent settlement, and is particularly interesting, as being the only spot in these Provinces, where people have located themselves for the purpose of collecting tin. Although inhabited only for three years, there are already about 100 Chinese, 160 Malays, and about as many Siamese on the spot, more than 500 in all, including women and children. The surface of the country is pleasingly undulated, having a range of high hills between it and the sea. It possesses a rich moist soil, highly favourable to cultivation. The sugar cane shewn to us was of large size, and the areca tree, which in other parts of Tenasserim does not fruit till the 7th or 8th year, was seen here in flower after being three years in the ground. Two heavy falls of rain occurred while we were in this neighbourhood, and it would appear that its climate, more resembling that of Penang than any other part of our coast, would be well adapted, with the advantages of soil before mentioned, to the cultivation of nutmegs, spices, &c.

8. The Siamese and Malays are occupied principally in clearing for cultivation, and the Chinese are the chief adventurers in tin. The head Chinaman has established a store of provisions, consisting of every description of supply suited to the wants of the people about him, which he exchanges for tin ore, to those who may be industrious enough to collect it. Of this he had three or four tons on hand, from which sample A was taken. It is precisely similar to specimens I have forwarded on other occasions, and consists of pure peroxide of tin, collected by washing from the beds of streams in that neighbourhood.

On the 17th, I proceeded to a spot which one of the Chinamen had fixed on for a stream work, and reached it after walking between four and five miles.

The stream is one of the tributaries of the Malewan, marked No. 1 in the plan. Their principal work was not on the main stream, the course of which we had followed to reach the place, but on a small branch, which then afforded water scarcely sufficient to clean and exhibit a sample of the ore dug out with its sand and gravels before me.

This tin soil consisted of fine grey sand, mixed with quartz and granite pebbles, and was taken from near the surface of the bed of the water-course; it was not here more than eighteen inches deep, for as soon as the iron pick, with which it was loosened, penetrated to the clay, they seemed assured there was no tin below. The subsoil all around is said to contain tin, the deposit of former periods; and in some of their excavations, I observed soil precisely similar to that from which tin was washed on the lower levels. From its occurrence so near the surface in existing water-courses, which from their slope must become rapids during the rains, I infer that tin must be washed down from its source in considerable quantities every year.

The trough used for washing is circular, about eighteen inches in diameter and six inches deep, in which the sand and gravel is piled and washed, as before described, by a rotatory motion of the hand. Specimens of the soil, and of the produce of separate washings are sent, numbered 1. During the dry season, little or nothing is done in collecting tin, but preparations only are made by trenching for considerable distances along the brow, or down the slopes of the adjacent hill, to obtain a fall of water during the rains. Under this the soil is collected, when the sand and pebbles are washed away, leaving the tin behind. Some of these trenches were from ten to twelve feet deep, and one of about three feet deep was nearly 200 yards in length. The fall so obtained saves the laborious process of washing with the trough in a stooping position, which is irksome to the men, but which women and children are said to perform with greater ease.

9. The next day I went again in a Northerly direction five miles, to visit three other localities, where other parties of Chinamen were engaged in similar works. At each of these places, there were from eight to twelve men employed in preparations for work during the ensuing rains. The surface soil is a rich red mould, the subsoil of the same grey sand and quartz pebbles as before, with abundance of tin intermixed, and rests upon granite.

The three spots visited this day have all the same character; from the first the separate washings were less productive than from the other two; but at these the quantity produced each time surprised me, and drew forth an exclamation of pleasure from the Chinamen engaged in collecting it for my inspection. The greatest quantity of clean ore

obtained from one trough full of soil was 2078 grs., while the average was 1235 and 855 grs. The time occupied in each washing is from five to six minutes.

They stated, that in the rains, one man would earn four rupees worth of tin per day. These small parties appeared full of energy and determination to make the most of the advantages before them. About their houses, situated in small clearances in the midst of the jungle, there was an appearance of comfort and cleanliness not often seen on this coast, while their good nature and hospitality is unbounded.

10. The prevailing rock around them is granite, which is seen in situ in several places, cropping out of the soil from the beds of the stream, and in the cuttings before mentioned, where I observed it was a good deal decomposed. I do not find on examination, that in any instance the tin exists interspersed in the granite, but have every reason to confirm the opinion expressed in former reports, of its occurrence in the fissures and cavities of the rock from which it has been removed by disintegration of the enclosing substance. None of the Chinamen have, as far as I could ascertain, penetrated to the principal granite hills, but are content with what they find in the streams at a distance from the source whence the tin proceeds. There doubtless it exists in veins or *vugs*, or cavities, in abundance. The metal being found so near the surface of the present water-courses, the causes which have distributed a rich layer of tin soil in and around them, are assuredly still in action. Fresh veins or cavities loaded with the crystalized mineral are thus becoming constantly exposed to the decomposing effects of the weather, and are therefore to be found by mining at very moderate depths. The stream works described will form, perhaps for long periods, profitable employment to Chinese adventurers, whose system of collection is that to which the Siamese and Malays are accustomed. These productive streams are, however, but the index of what is to be found elsewhere, and if these localities ever attract the European capitalist, of whose notice I believe them to be well worthy, the proper sphere for the scientific miner should be in the hills themselves. There, if a little cautious investigation were previously made by practised men in search of a spot for mining operations, the use of the common horse whim, or the most ordinary draining apparatus, would, in my opinion, in the course of a very short time discover veins, which

it would be very profitable to follow out with more complete and expensive apparatus.

11. After my return from the tin works we left Malewan, and proceeding next day down the river, anchored at the mouth of the Rhenong river, for the purpose of visiting the Siamese tin works and smelting establishment on the Southern or Siamese side of the Pakchan. This tidal creek is nearly dry at low water, but small junks come up with the flood: it narrows considerably at three miles from its entrance, and is very circuitous; after three hours' pull in a boat in a S. E. direction, we reached the settlement of Rhenong.

The leading people here are Chinese, who have a high fenced enclosure about eighty yards square, one side of which is occupied by the smelting establishment. A few women were employed in sifting tin ore* through a fine sieve. Only one furnace, or large crucible about four feet high, of conical form and three feet diameter at top, formed of baked clay, appeared to be in use, this was well worn, and a new one was there ready to replace it. One pounding or stamping machine, with a tilting bar worked by the foot, the Chinese bellows, and heaps of charcoal, were all the apparatus visible. No tin is collected except during the rains, and the village did not contain more than fifty families in all.

The duty said to be paid to Siam by the Chinaman is six tons of smelted tin per annum, for which he enjoys an entire monopoly. The collectors of the ore are paid a nominal price of two dollars for eighteen viss of ore; but as the payment is made by small ingots of tin, the only currency in use, the actual value received by workmen according to the present selling price of the metal, is eight rupees per hundred viss of ore: the same quantity being at Mergui worth forty rupees. It appeared from the information we were able to collect of the reported arrivals of junks at Rhenong for cargoes of tin, that not more than from sixty to seventy tons are produced per annum. The spot itself having a bold range of granite hills near, with level rice ground between it and the stream, has a very pleasing appearance. A few women were engaged in collecting tin ore in a clear stream running over granite boulders, within a few minutes walk of the place, and the

* Specimen B.

produce of several separate washings from the trough was taken and noted, the result of which, compared to those of Malewan, &c. will be found below.* Their principal stream works are a day's journey distant towards the hills, which we could not visit.

12. With the falling tide we rejoined the steamer, and soon after stood between the islands to the Northward towards Bokpyen, one of our own settlements, and visited some of the islands on our way. The most remarkable of these are the bird's nest rocks, of which we inspected two, the Turrets and the Elephants; they consist of fine picturesque masses of limestone rock, which stand boldly up, and present a perpendicular wall to the sea, with deep water all round them. The edible nests of the small Martin, so much prized in China, as to sell sometimes for more than their weight in silver, are found on the sides of chimney-like cavities, which extend from the summit of the rock more than 200 feet above the sea, having a small cavernous opening, with room enough only to admit a boat at low water.

13. Bokpyen, which is marked in Captain Lloyd's Chart, though not included in the sketch herewith, is a neat and flourishing village, containing about 98 houses, or 400 inhabitants in all. They are chiefly of Malay extraction, and occupied in the cultivation of rice, the collection of rattans, fishing, &c. The Bokpyen river produces tin, and during the Siamese rule, large tin works are said to have existed. A channel for running water, the remains of which are now traceable, is reported to have extended over a considerable distance by aqueducts and cuttings, which is presumptive evidence of the abundance of tin in the neighbouring hills. Little or none is collected now; one man brought us a very good sample in a bamboo; from this he said he had sifted the fine grained tin, which he had either sold or smelted, and, not knowing what to do with the large pieces, had kept them.† These were lumps of pure peroxide of tin, measuring from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch, without any quartz or earthy matter adhering, and this he called "refuse tin," which was of no use to him: a fair example of the ignorance with which tin working is conducted in these localities.

14. The following is a comparative statement of the produce of separate washings from a trough full of tin soil, each washing occupying

* Specimen No. 5.

† Specimen C.

five minutes in filling from the bed of the stream and cleaning, as exhibited by the specimens sent and numbered:—

Locality	Malewan, No. 1.	Weight of sepa- rate washings in each Grains Troy.	Average of Average of Troy.	Average of the whole in Grains Troy.
		326		
		404		
	*	320		
	*	327		
		177		
		157		
		163		
		143		
Malewan, No. 2,	*	297	252	
		93		
	*	448		
		120		
		177		
		472		
		180	555	
Malewan, No. 3,		534		
	*	1499		
	*	1100		
		2078		
		1024		
		1173	1235	
Malewan, No. 4,		1076		
		503		
	*	1142		
	*	698	855	650
Rehnong, No. 5,		1081		
		371		
	*	991		
	*	653		
		542		
		555	699	699
Bokpyen, No. 6,		373		
		263		
		319		
		227		
		464		
		1011		
	*	381	434	434

A good specimen collected at Bokpyen, by two men in about twenty minutes, weighed 2040 grains. The specimens marked by an asterisk are sent in duplicate with this report.

G. B. TREMENHÈRE, *Captain,*
MAULMAIN, 8th April, 1843. *Executive Engineer,*
Tenasserim Division.

Memoir on the application of Asphaltic Mastic, to Flooring, Roofing, and Hydraulic works in India. By Captain GOODWYN, Engineers. With a plate.

[This valuable memoir has already been lithographed, in which form many of our readers may have perhaps seen it; but its importance in all points of view is so great, that we have not hesitated to request permission from its talented author to insert it in the Journal.—EDS.]

At no period probably did there exist such an union of essential qualities in the means of constructing as at present. Allusion is here made to the value of the material employed, and the art of working and disposing it, so that in all classes of erections, whether private or public, there is an addition to personal comfort and convenience, combined with permanency of structure at an economical original outlay, estimated with reference to the least possible expence in subsequent maintenance.

The following memoir, in connection with others having relation to the improvements of the age, is drawn up with a view of introducing a most valuable material to general notice, one worthy the patronage of the Government, as well as the attention of the merchant, the planter, and all connected with building of every description. A material which has been extensively used with the most complete success on the continent for some years, and lately equally so in England. The excellent qualities and varieties in the mode of its application have received the approbation of the heads of our Engineer Corps now at home, Generals McLeod and Tickell, and Colonels Hutchinson and Colvin, in consequence of whose opinions I brought it to the notice of the Court, and was by the Directors permitted to bring some to Calcutta to be

submitted to experiment. This is sufficient authority for my advocating its adoption, and constitutes a guarantee for its future success in India. I will here slightly anticipate the subject by noticing the result of an experiment which I undertook, to prove the efficiency of the substance to resist great heat, lest any sceptic should stop short of a full investigation of its merits, under an idea, that its component parts being bitumen and pitch, it would not answer in India.

A section of prepared flooring in a wooden frame 12" + 6" with a surface of 3-8" of mastic was placed in a large oven (used for reducing the asphalt to powder) with a thermometer which directly rose to 230°, and though kept in for six hours, it presented a surface at the end of that time quite free from grease, proving that the pitch, the proportion of which is small, was not drawn out by the great heat, the extent of which I could not ascertain, as the thermometer tube broke shortly after insertion. A very few minutes after being spread in a fluid state, it again resumes its original density, which is such, that at 100° Fahrenheit, it resists all impressions from ordinary force. How frail and perishable are the floors and terraces of ordinary construction? In many situations unable to resist the wear and tear to which they are exposed from a variety of causes, such as the friction of stores and other heavy articles in magazines and store rooms, the dragging to and fro of boxes, cots and musquets in Barracks, &c. &c., whilst public as well as private property suffers considerably from the facility of access to white ants and damp through the slightest crevices in floors. Who is not aware of the rapid increase of the smallest hole in a terrace floor, and of the difficulty of efficient repair from the want of combination between the new and old material? It must surely then be no small matter of consideration, the employment of a material which offers a remedy for these evils, and affords a means of putting a stop to the constantly recurring heavy outlay on repairs.

It is well known, that the use of a bituminous cement was common in ancient structures, and history informs us, that the walls of Babylon, that wonder of the world, were cemented with hot bitumen.* In the

* The Museum of the Society contains four bricks from Babylon, presented by Mr. Rich, and marked with the arrow-headed characters. On the reverse of these the bituminous cement is yet partially adhering, and upon examination, its chemical characters were found closely to correspond with those of Captain Goodwyn's Asphaltic Mastic.—Eds.

destruction of some remains of fortifications, supposed to be of Roman erection near Pymont about 45 years ago, so great was the tenacity of the work, that it was not pulled down without the aid of gunpowder, which circumstance led to an important discovery ; it was observed that the cement resembled the asphaltic rock of Pymont, about five miles North of Seyssel at the foot of the Eastern side of mount Jura, on the right bank of the Rhone in the department de L'Ain. Several applications of the substance were immediately made, and the experiments on its properties as a cement for building masonry and keeping out damp succeeded entirely, since which, the working of the material has become of great importance. In the immediate vicinity of the asphaltic rock is obtained a peculiar kind of mineral pitch, which mixed in certain proportions with the asphaltic rock, forms the mastic, the subject of this memoir. Mr. Claridge, an English gentleman, has taken out a patent for it in England, and is most successfully bringing it into general use under the sanction of the Commissioners of woods and forests.

The surface of the ground in the locality of its discovery is covered by a molasse, consisting of silicious gravel and bitumen intercepted by deep ravines. A mass of calcareous asphaltic rock is situated between two of the ravines, the external appearance of which is whitish, but internally it is of a deep brown color. The asphaltic rock is equally diffused throughout the rock, in some places more or less saturated, but in others the calcareous matter is quite pure,* leading to the conclusion, that the asphaltic rock is ramified in veins in the mass under the molasse. The calcareous asphaltic rock is not stratified, fissures are seen intersecting each other in all directions. Various are the opinions of its formation, but the following is the most probable,—that it has been generated by heat naturally acting on the bituminous matter below strata of carbonate of lime ; some of the bitumen has passed up and mixed with the lime, by nature adjusted in just such proportions as the lime would absorb, thus has been effected by a natural force, what by art could not have been, and it is this which renders this material so far superior to any manufactured article.

The resinous and sulphuric particles have passed up to the surface and formed a crust, so that the inflammable qualities, as well as the

* Bulletin de la Société Géologique de la France, Vol. VIII. p. 138.

naphtha have been destroyed by volcanic agency, and the material is not liable to ignition. The calcareous asphalte contains from 15 to 18 per cent. of bitumen, the remainder is carbonate of lime. The bitumen from the results of experiments of a French chemist is found to be a compound of

Resinous petroliferous matter,	...	...	60 to 70
Carbon,	...	..	30 to 35

It is from the carbon that the dark color and property of hardening in the air arises which renders it so useful in the arts. The spaces below the carbonate of lime are fissures containing the mineral pitch, which is formed of the heavier particles of bituminous matter and carbon in another form, probably having experienced greater heat. As used in England and the continent, the asphalte is reduced to powder by baking, and being mixed with a proportion of about one-tenth its weight of the pitch and a fine grit, is reduced to a semifluid state, and poured on to the spaces or moulds prepared.

For exportation, however, the substances are formed by the Company in England into a mastic, and sent to distant parts in blocks of a cwt. each; by this means it is rendered useful to those who may not have had the advantage of witnessing the mode of application in England, as the mastic has merely to be heated, and laid down in the way which will be described hereafter. The mastic possesses nearly the hardness of stone, but preserves a certain elasticity which prevents the surface from wearing or chipping, and carriage wheels and horses' hoofs cannot disturb the evenness and regularity of its surface. Not the least of its valuable properties as a material for building purposes in India, is the facility of its removal from place to place; after having been laid down as a terrace in one building for years, it may be taken up, and requires merely to be reheated to be laid down elsewhere with equal utility. It is anti-electric, which makes it valuable for roofing purposes, and is not inflammable, the quantity of pitch being so small. The late fire at Hamburgh is proof of the non-inflammability of the material, for the roofs of many houses were terraced with it, and great alarm existed lest these roofs should burn and cause more devastation; they fell in solid masses unconsumed, and instead of serving as fuel, extinguished in their fall, the flames beneath them. It is wholly impervious to moisture, and can be extended indefinitely, and

and even where joints are necessary they can be so closed as to present a continuous surface; neither does it impart taste, smell or color, to any liquids that may come in contact with it when employed to line tanks, vats, reservoirs, &c. Having thus stated its origin, composition and essential qualities, I will proceed to the modes of its application.

The purposes to which it has been applied in France are so extensive and various, that they first claim attention. The Chevalier de Pambour states, that the pavements in several crowded thoroughfares of Paris have been made of this substance for the last six years,* and are now in excellent order. It has resisted the oscillation on suspension bridges and the varying temperatures of heat and frost, the asphalt being on such structures as perfect as the day it was laid down. For roofing edifices, lining water reservoirs, and paving stables it has been particularly useful, having been laid down seven years in the stables of Cavalry Barracks. It has been extensively applied in the fortifications of Lyons, as stated by M. Gahan, a Captain of Engineers, also at Lisle and Vinceunes, and the Artillery have covered the roofs of warehouses several years since in the arsenal at Douai, which have withstood all weathers. The naval department also have made numerous trials of it in the various buildings at the port of Toulon, and it is being introduced into the other ports of France. The pavement formed of it resists better than stone the friction of chains in Dock Yards; and in Jails and Hospitals it has been used not only on account of its durability, but that it keeps particularly clean, and ablutions are performed more easily on it. The material is also used on the "Pont Royal," and "Pont de Carrouse," on the areas round public fountains, in the court yards and extensive floors of colleges and churches.

It has been employed as a cement, and is more particularly valuable under this head for hydraulic works; several large tanks have been constructed in Paris with it. The mode adopted has been to cover the faces of the bricks that were to be exposed to the water with a very thin coat of asphalt; they were set in fluid mastic instead of cement, which was also poured into spaces, left for the purpose, of one-fourth between the inner and outer bricks forming the side walls as

* This was stated in 1840.

the work advanced. The bottom was afterwards covered with three-eighths of the mastic. Its use as a cement for hydraulic purposes is not new, for Buffon in his *Natural History*, article "Bitumen," says, "J'ai fait enduire il y a trente six ans un assez grand bassin du jardin d'histoire naturelle qui depuis a toujours tenu parfaitement l'eau." That Buffon did so write is stated in a pamphlet called "*Observations generales sur les mines bitumineuses du Parc de Pyrmont.*" In the "*Place de la Concorde*," in the centre of which the Egyptian obelisk is erected, about 24,000 square yards of most magnificent pavement are laid down of asphalt in elegant mosaic work, the fluid substance was spread in moulds of bar iron of the required pattern, which in this instance is alternate squares of black and white, each square having a circle of the opposite color to itself, in the centre. At the estate of the Baron de Montmorency is a conservatory floored in the most splendid manner, the substance being formed into patterns of foliage and scrolls, with a rich Grecian fretwork border. In London it has been used in several places; the noble piece of pavement at Whitehall and the carriage drive to the Ordnance Office may be cited as examples. The roofs and terraces of several noblemen's houses are covered with it, and its efficiency universally acknowledged. In the manufacturing towns, the floors of large workshops and store-rooms are laid with asphalt, and the terraces of many sheds of railway stations. The whole of the arches of the Greenwich railway are covered with it, with a view of preserving that extensive viaduct free from damp. It is used as a foot pavement in many of the metropolitan parishes and in country towns also, and one of the principal streets of Liverpool is paved with it. To such a mass of evidence of the great utility and value of the material, as it has been applied in Europe, there is to be added the experiment of its efficacy as lately laid down in Calcutta, the Court of Directors having permitted the writer of this memoir to bring out a ton of the mastic for the purpose of testing its fitness for the public service. Petroleum oil is to be found in the neighbourhood of Rangoon, and on the Irawadee N. E. of Pegu and elsewhere, which substance, after the naphtha is distilled from it,* will answer as a substitute for

* The price gained for the naphtha might cover most of the expence of procuring the Petroleum. Limestone impregnated with bitumen, dried, ground and mixed with its own weight of coal tar is an admirable cement and will form a most desirable terrace its mode of using, the same as asphaltic.

the mineral pitch and render the asphalte cheaper to use in India, as the pitch need not be exported. In case some such expedient should be resorted to, I will here annex the cost of the separate material, as well as of the mastic or compound as sold by the Proprietors in London.

1 Ton of Asphalte powder	...	...	...	£5	0
Cask, &c.	...	..	..	..	1 4
Mineral Pitch, (proportion 2 cwt )	...	..	..	1	18
Total, ..					£8 2

The mastic is in blocks of 1 Cwt. each $18 \times 6 \times 4$ and £6 10s per Ton: with the mastic however a little pitch is necessary to flux the first quantities when using, as will appear presently.

1 Ton of Asphalte, or	..	20 Cwt.
Fine Grit,	...	8 do.
Pitch,	...	2 do.

Total 30 Cwt. will cover a space of 400 feet $\frac{3}{8}$ thick for flooring. Exported in large quantities the cost of 100 superficial feet would be from 12 to 15 Rupees, exclusive of the substratum of concrete.

Instructions for use.

The mastic being ductile, great care must be taken to have a good foundation of concrete, or lime gravel, or broken bricks, with a thin coat of hydraulic mortar over all, the surface being made level: on this the mastic in a semifluid state is laid $\frac{3}{8}$ in thickness.

Mode of preparing the Mastic for use.

In the absence of a proper cauldron, such as is shewn in Fig A. a large pitch pot may be used over a strong fire; the blocks are broken up to the size of 5 or 6 ins. cube, and put into the cauldron with 1 per cent. of pitch to flux the lower layer, more mastic is put in by degrees when the first quantity is melted, which will flux the rest in succession, care being taken to stir it the whole time with the instrument shewn at B.

When the Cauldron is full or a sufficient quantity melted, and it has assumed the consistency of jam, it is fit for use. If the work is expected to have been fixed only with respect to existing *aurangs*: new ones

tensive, a number of cauldrons should be heated at once, as one of the indicated dimensions will not lay down more than 70 supl. feet.*

In laying it down, a lath of the required thickness of the coating is placed across the floor or roof prepared as above, which from the wall or curb, as the case may be, should divide the whole space into compartments of about $2/6$ wide. It is necessary before laying down the mass to cut a small channel (if for a floor under the wall, if for a terrace close to the curb) of 2 ins. wide and 1 deep, into which hot mastic should be poured, and taken up again when settled in order to warm, and enable the whole to bind and adhere at the edges. Into the compartments above-mentioned the mastic is poured with a large ladle, the bowl of which should be a foot in diameter and 6 inches deep, each ladleful, as it is poured in, is rubbed from the centre towards the wall or curb with a wooden float (made of cask staves), and a smoothing rod of 3 feet long and 2 feet square is applied to level the surface by a man immediately in rear of the one who uses the float, who also whilst the substance is still hot sprinkles a powder on the surface through a very fine sieve, composed of the finest sand and unslaked lime, reduced into an impalpable powder in equal quantities, which is rubbed in with a flat board, and gives a white surface to the terrace which does not wear off. The surplus is carried forward with such a hand brush as the figure shews, at C as soon as the liquid material is smoothed. Care should be taken to force the substance well into edges and joints, and in removing the gauge rod not to lift it, as it may raise the asphalte with it; but by a gentle tap to loosen it horizontally from the mass. In laying down at two different times, when the first layer has had time to harden, the edge must be warmed with a little hot material laid on for a minute and removed, the work then to be proceeded with directly. If a roof is covered with wood, coarse canvas should be stretched over it and nailed, and the mastic laid on that, finishing it off with a fillet, as in D of the plate. Store rooms and magazine floors should be $3/4$ inch thick, stables $4/8$, and carriage drives 1, coverings of arches $3/8$.

* The cauldron must not be left standing, as the material will burn.

Contributions towards a History of the Development of the Mineral Resources of India. By S. G. TOLLEMACHE HEATLY, Esq.

No. 2. Memoranda relative to the working of Iron in Bengal

The existence of iron in the districts of Balasore and Beerbhoom, seems to have been known at the earliest period of British rule in the country. With regard to Balasore, the following passage occurs in Captain Alexander Hamilton's Account of a Voyage to the East Indies in 1708, [vol. 1, p. 395] :—

In two days I travelled from Badruc to Balasore, and saw nothing in the way but things common and indifferent, the product of the country being corn, cloth, *iron*, anise and cummin seeds, oil and bees' wax. Iron is so plentiful, that they cast anchors for ships in moulds; but they are not so good as those made in Europe.

In Beerbhoom, iron manufacture seems to have been of not less antiquity. The ore which abounded in the district was dug out and collected by a set of men, who sold it to the *beparries* or itinerant dealers. A trifling contribution was levied on these miners by the Rajah within certain limits, and by some other landholders in their estates. The ore was carried by the *beparries* to established markets called *aurungs*, where it was purchased by the smelters, whose furnaces or *saals* adjoined the *aurung*. At these markets the Rajah had officers who levied a duty from the smelters in proportion to the quantity manufactured: part of the levy was made at the *kot-saal* or roasting furnace, and part at the *khamar-saal*, where the iron was finally prepared for use. The whole of the collections thus made was entered under the head of *loha mahal*, and was kept distinct in the Rajah's accounts from the rent of the land in which the *aurungs* lay. The Rajah again paid a certain assessment on his profits to Government, which assessment was also designated by the term *loha mahal*. The same item of Government accounts comprehended also the payments made by the few detached landholders, to whom I have before alluded as imposing duties upon the miners in their estates. This detail will I think, in conjunction with the narrative that follows, shew clearly, that the right of ownership of the iron was

vested in the sovereign authority. the zemindars only claiming property in the ore by right of consideration paid into the treasury. Further, the right to the mineral products of the land was distinctly separated from the right of cultivation on the surface.

In 1774 a proposal was submitted by Indernarain Sermono to the Burdwan Council, and by them to the Presidency one. The correspondence is as follows :—

The Burdwan Council to Government.

* * We transmit you copy of a proposal, which has been delivered to us by Indernaram Sermono, for clearing away the jungle, and manufacturing iron in a mountainous part of the district of Beerbhoom, together with the sketch which accompanies it of the tract of country, for the lease of which he has applied. We beg leave to submit to your consideration, and have only to observe, that by an inspection of the Mofussil accounts, none of the places mentioned within the boundary he has described, appear in the jumma of 1178, and that from the inquiries we have made, we believe that tract of country to be in the unfruitful condition described by him.—19th September, 1774.

Indernaram Surma's Proposals.

In the province of Beerbhoom, there is a considerable tract of mountainous country overrun with jungles, and which, in its present uncultivated state, serves no other purpose than that of a harbour of *Choars*, who live upon plundering the inhabitants of the cultivated lands. Within this space, there was formerly a village called Hatgatchya, situated about a coss south of a hill called Monsa Pahr (both in the Pergunna of Mallarpore). At first this village was much injured in 1174 and 1175 by the depredations of the *Choars*; and in the year of the famine, the whole of its inhabitants deserted the country around the village. On the north side three coss, on the west three coss, on the south three-quarter of a coss, and on the east two coss is an entire jungle, and yields no revenue. Accompanying is a sketch of it. This tract of country, in many parts of which iron ore is to be found, I request the lease of, on the following terms.—

The lease is to be granted to me for 7 or 10 years; for the first year, on account of the great expense which I shall incur by cutting the jungle

and erecting *saals* (or smelting places), I can pay nothing. For three following years I will pay 2000 Rs. per annum, and for the remaining years of the lease, I will pay 5000 Rs. per annum, which shall be in full of all rents or customs whatever.

I will engage, if business succeeds, to supply Government with what iron they may want at the bazar price of the time they may demand it.

I will not force any ryots from the Malgoozary lands, nor give protection to any who may desert with arrears of rent due to the farmers.

The *Choars* and mountaineers, who at present infest the Malgoozary lands, and by their violence cause the ryots to desert, will themselves engage in the working of iron. They gave me assurance of this, when I was lately in that country. I have travelled over the greater part of the country described in my sketch; I am confident no part of it is either included in the jumma of any of the present farmers, or yields any revenue to Government; but should I be mistaken, and it be hereafter discovered to contain any jumma lands, I will readily pay the highest rent that has been received from it since the beginning of 1178.

If the above terms are accepted and a grant given me--should Government, at the end of my lease, think proper to take it into their own hands--in consideration for the expense and trouble I shall have been at, I request a preference in farming it. In case they should not deem this advisable, I request to be allowed, for the expense of all the buildings I may have erected, whatever shall be determined to be their value by an Ameen sent by Government.

Government to the Burdwan Council.

We approve of the proposals offered you by Indernarain Surma, for clearing a part of the waste jungle lands of Beerbhoom, and manufacturing iron; and authorize you to grant him the necessary deeds accordingly, receiving from him such writings in return, as may bind him to the performance of his engagements with Government, and the observance of the conditions he himself proposes.—23d September, 1774.

Nothing more with reference to this attempt appears on record. Perhaps the speculation was of too sanguine a complexion, as the high rents offered lead us to apprehend, and was silently abandoned on second thoughts by the projector. One thing is, however, proved by it, and that is the *loha mahal* already accruing to Government seems

to have been fixed only with respect to existing *aurungs* : new ones might be founded and brought into operation by the enterprize of individuals on their payment of a consideration to Government. The farmers of the existing *aurungs*, among whom the Rajah of Beerbhoom was the principal one without comparison, do not seem to have been at all consulted as to the lease. They could not therefore have had any right to the mineral product beyond what was specifically granted by Government, for the amount of consideration received. I am anxious to draw attention to this fact, as this very pergunna of Mullarpore became subsequently the scene of a hotly contested law-suit, involving the tenures of these *loha mahals*.

The next attempt was more fortunate. It was by Messrs. Motte and Farquhar. In all similar transactions of that period, one partner was, for obvious reasons, chosen from among the influential residents of Calcutta. His watchful presence at the focus of intrigue was required to defeat the machinations of interested parties, and enable the others, the working bees, to pursue their speculations in comparative quietness. To this *patron*, his *clients* could with ease afford a share of the proceeds at a time when the profits of trade were enormous, and he returned them, what was then indispensable—political protection. Thomas Motte, the patron of the firm in the present case, was the Superintendent of Police in the city, and an intimate friend of Warren Hastings. He had been employed in 1766 by Lord Clive, on a mission to Sumbhulpore, to open a trade in diamonds with that country ; a previous attempt by Captain Mallock, under the direction of Henry Vansittart having failed. Motte's endeavours were equally unsuccessful,—a result which he attributed to the indolence of the inhabitants, and the iron rule of the Mahrattas, who at the period held the country as far as the Soobunreeka. An account, interesting in all its features, of this expedition drawn up by Motte, appears in the Asiatic Annual Register for 1799. He was an enterprising character, though he did not seem to take much interest in the iron speculation about to be narrated : and from some of the partizan pamphlets that were showered about so thickly during Hastings' trial, I learn that he must have died a little before it, broken in spirit and fortune.

John Farquhar is not unfamiliarly known to many of my readers as the individual who subsequently purchased Fonthill Abbey, from the cele-

brated Beckford. His peculiarities, his parsimonious habits, his shrewdness, his eye ever watchful over his interests, were sketched with great felicity in that cleverest of periodicals, Knight's Quarterly Magazine, in "An unpublished episode in the Life of Vathek."

Steel through opposing plate the magnet draws,
And steely atoms culls from dust and straws ,
And thus our hero, to his interest true,
Gold through all bars and from each trifle drew.

But the qualities which emphatically make *the man*, as distinguished from the merely social man—the bold speculative genius, the independent character, the untiring perseverance, the readiness to grapple with obstacles, the skill to overcome them—these do not fall within the province of the light *littérateur*. They are written in an alphabet and a language of their own, impressed in indelible characters upon the freedom, the national character, or the commercial prosperity of the country, where such men have existed. They may be forgotten, or they may become inappreciable to careless observers in the lapse of years, but they continue to exert an influence, not loud but deep, through time—as surely as are propagated the undulatory impulses

From world to luminous world afar,

though infinite to the failing sense may seem the spaces between. Such qualities mingled in the character of John Farquhar : they won for him prosperity in his lifetime : and respect from those whose respect compensated for the gibe of the jester.

The Memorial submitted by these gentlemen to the Council of Warren Hastings, I subjoin entire :—

HON'BLE SIR AND GENTLEMEN,—Having the greatest confidence that any scheme proposed for the advantage of the Hon'ble Company, or for the good of this country, will always be received in the most favorable, and discussed in the most candid manner at your Hon'ble Board, we beg leave to offer to your consideration the following plan, for casting the H. C.'s shot and shells in Bengal, and for working a lead mine lately discovered in Ramghur.

The first part of our plan, you well know, Gentlemen, is no new scheme ; for it appears by the following quotation from a letter of Lord Clive and

the Select Committee in the year 1765, that the casting of shot and shells in this country had been deemed by the Company an object of importance. "The iron-founder whom you sent out in the Kent died on his passage to this place; but as the casting of shot and shells in this country is an object of great importance, we strongly recommend that you will supply the loss as soon as possible, by sending three or four persons well versed in that business, that our whole design may not be frustrated by such an accident in future."—[*No. 86 of Appendix to Report from the Select Committee of the House of Commons, Vol. 1.*]

In consequence of this application, a Mr. St. Quintin was sent out: but he likewise died a short time after his arrival.

We suppose that on account of the death of those two founders, and of the great expense of the cannon foundry, the thoughts of this undertaking have been laid aside: for we conceive that every reason which at that time made it to be looked upon as an object of importance has ever since remained equally forcible, and the present aspect of the affairs of Europe appears to us a very powerful additional one.

Besides the advantages which the Honorable Company proposed to themselves by erecting an iron foundry in Bengal, we beg leave to mention some others, which we have reason to imagine were not at that time thought of. Should iron trucks, lately introduced for garrison gun carriages, be approved of by the Board of Ordnance, the supplying of them here would certainly be very desirable.

But the greatest object, and which perhaps in time may be esteemed of considerable importance not only to the Company, but even to the nation, is the casting of cannon and mortars of a quality, superior to that of the ordnance of any other state. For amongst the various ores produced in this country, there is one found in Beerbhoom, and in great abundance in Ramghur, which yields an iron so extremely soft, as to be fit for few of the common purposes of life: but this property renders it in an eminent degree superior to all other kinds, for almost every work in cast iron, and particularly for the fabrication of cannon.

This quality the celebrated M. Reaumur, M. Buffon, and some others of the most eminent French naturalists and mineralogists, have been long endeavouring to give to cast iron, principally with a view of improving the artillery,* and their labours have been much approved of by the Ministry. The same thing has been lately attempted in England, but without much success. The only iron ore that we know of, possessing nearly the same

* Witness two Memoirs by M. Buffon; the one on the "Smelting of Iron Ores," the other entitled, "Observations and Experiments made with a view to improve the Art of casting Iron Cannon. Paris 1775."

property, is one, amidst upwards of 60 different kinds, described by the Abbé Chappe, the produce of Siberia, and he regrets that the iron of it is not more known in France.

Now we conceive that by casting that peculiar iron in the form of kentledge, and by exchanging it with that of the Europe ships, such quantities of it could be sent to England, as would be a valuable addition to the Honourable Company's commerce, and the Europe kentledge might be sold to advantage for the use of country ships: for besides its being as admirably adapted to the fabrication of artillery, it would be of equal value for several other uses, but particularly for wire-drawing, and we flatter ourselves that it might be the means of securing to some of the British manufactures that superiority which they have hitherto possessed over those of every other nation.

The benefits which would accrue to this country in particular from the establishment of iron works would undoubtedly be very considerable, for at present vast numbers of cast iron pots, frying pans, and other utensils are yearly imported into Bengal from China, and are sold at very high rates; but by supplying the market with these articles manufactured within the Company's possessions, not only considerable sums would be saved, but a valuable branch would be added to the exports of this settlement. Cylinders for sugar mills, boilers for sugar works, salt works, saltpetre works, and for several other purposes are much wanted: and there is no doubt but they would greatly contribute to the improvement of those manufactures. Cast-iron rails, pale-gates, and rails for staircases and balconies, would add much to the beauty, as well as to the convenience of the houses in Bengal. And every merchant will allow, that iron kentledge for the country ships, especially such as are employed in the cotton trade, is an object of the greatest importance to the commerce of this port. How far it would be politic to give such encouragement to the manufacture of bar iron and steel in the Western Provinces, as would enable them to supply all Bengal, and consequently to prevent the other European nations from importing any, you, Gentlemen, are best able to judge. This would undoubtedly be highly beneficial to the country, both by furnishing the implements of agriculture readier and at a much cheaper rate than they can be procured for, at present; and by saving very considerable sums which now go to Balasore for Mahratta iron and steel, with which last article these provinces, you well know, Gentlemen, are very ill supplied. And certain it is, that this could in no way affect the interest of the mother country: for it is well known, that instead of being able to exports iron and steel of the produce of Great Britain, she is obliged to import at least two-thirds of what is used in her own manufacture. Nor will the increase

of iron works in England ever be judged good policy, as they have already destroyed some of the finest forests of oak, and as the workmen required for them can be employed to greater national advantage in the finer manufactures. We know that the French have, within a few years past, erected some very fine forges in the Isle of France, whether with the view of being able to undersell every other nation trading to India, in the articles of iron and steel, or of supplying the country powers with artillery in the most secret manner—we cannot pretend to say: but from the extreme lowness of the price of slaves there, we think it highly probable, that they will be enabled to do both as soon as the islands are sufficiently cultivated to produce provisions in plenty for their inhabitants, especially as it appears from what M. Bougainville (in his Voyage round the Earth,) says of those works, that their owners are supported by the French Government.

We shall now, Gentlemen, take the liberty to offer our sentiments with respect to the utility of working the lead mine in Ramghur. This mine consists of one small vein, which produces the ore known to mineralogists by the name of Potter's lead ore, because instead of being smelted on account of its metal, it is usually sold with greater advantage to those artificers for the purpose of glazing their wares. Now as no people make more use of earthenware than the natives of this country, and none are worse provided with materials for glazing it, the only means of rendering it neat or cleanly, or capable of containing fluids for any considerable time, we presume it would not be very difficult to introduce this improvement into common use. Besides, as all lead ores are known to contain a certain portion of silver, though generally too small to bear the expense of extracting it, we might perhaps find this ore worth treating upon that account, since fuel is remarkably cheap in Ramghur, and since the litharge into which the lead must be converted in order to obtain its silver, would answer still better the purpose of the potter than the raw ore.

Another beneficial consequence of working this mine would be, the supplying of the market at Patna with lead ore: for at present considerable quantities are carried thither, and sold by the name of *surma* (antimony). This ore is brought from countries to the westward of any of the Company's possessions, and is used by the country people chiefly for colouring their eyelids. We have had it very accurately assayed, and can pronounce with the utmost degree of certainty, that it is a true lead ore, not containing the smallest particle of antimony.*

* I might as well state here, on the strength of repeated analysis, that no small portion of what is sold at this day in the bazars, under the name of *surma*, is a sulphuret of lead without a particle of antimony. To those who physic their own horses, this hint may not be valueless.—S. G. T. H.

This undertaking would certainly prove very advantageous to the province of Ramghur, by procuring employment for a tribe of people found there and in the neighbouring provinces called *Coles*, who at present live in the jungles almost in the state of nature: yet although totally unacquainted with the conveniencies and comforts of a settled and civilized state of life, they are easily induced to quit their retreats, and are then found to become tractable and good labourers.

But we find our letter has extended to a length we little thought of: we shall therefore, Gentlemen, intrude no further upon your time, dedicated to affairs of so much greater moment, than to propose to you the terms which we think would enable us to carry our plan into execution.

After having obtained the best information in our power, we are of opinion that the pergunna called Jerriah, lying between the rivers Dummooda and Barracar in the province of Pachete, is the fittest situation for the iron work. The river Dummooda is navigable as high as that place; it abounds with iron ores, and has the singular advantage of being contiguous to the coal mines of which Messrs. Sumner and Heatly have a grant.

We propose then :—

I. That a sufficient quantity of land in the pergunna of Jerriah in Pachete, (or in any other province if appearing more advantageously situated for that purpose,) be assigned to us, for erecting the iron furnace and warehouses, and for the habitations of the workmen and labourers, to be held by the same tenure, by which Messrs. Touchet and Prinsep hold their lands.

That a like quantity of ground be granted to us for similar purposes, and on the same condition (if at present paying rent to the Company) at the lead-mine, but if Jaghire, that we be permitted to buy from the Jaghiredars such lands as may be requisite for the settlement of our people, and particularly Dugherra valley, without which it would be impossible to carry on the work, as the Jaghiredars we well know would levy such heavy contributions on our workmen, were they in their power, as would prevent them from working under higher wages than we could afford to give :—

II. That we be granted the exclusive privilege of working iron and steel in the European manner within any part of the Honorable Company's possessions which lie on the west side of the meridian of Burdwan, and of selling the produce of such manufacture, free from duty, in any place under the presidency of Fort William, for the term of nineteen years. That we be granted likewise the exclusive right of working the mines of whatever ores or minerals are not at present wrought by the country people within the aforesaid limits for the same number of years. By this article, however, we have no idea of prejudicing the rights of Messrs. Sumner and Heatly, who, you know, Gentlemen, have the exclusive privilege of

working the mines of coal, or of any mineral or metal, iron excepted, within certain districts of Beerbhoom and Pachete :—

III. That we enjoy the immediate protection of your Hon'ble Board, and be in no manner subject to the direction or control of the Burdwan Council, or of any of the Company's servants resident in the provinces within the above-mentioned limits, because should the Hon'ble Company ever be pleased to allow their officers of revenue the benefit of trade—it is obvious how much our works would interfere with their interest ; and in case of disputes happening between the Zemindars or Farmers, and our Agents, they would sit as judges partly in their own cause. But that should any disputes arise, they may be determined by arbitration, or if becoming of a serious nature, by Commissioners sent from the Presidency—we obliging ourselves to abide by the decision of your Hon'ble Board on their report, and if found in the wrong, to pay the expense of such inquiry :—

IV. That we be permitted to employ Europeans in our works ; we giving security, if required, for the good behaviour of those employed in the execution of that part of our plan which is of a private nature, but that such as may be required on account of the Hon'ble Company's work be on the same footing as the artificers of their contractors, who enjoy the greatest privileges :—

V. That we be allowed to take into partnership any person or persons whom we may at any time judge necessary to assist us in conducting our designs :—

VI. That on our part, we engage to erect furnaces and all other necessary works, and to keep workmen in constant readiness at our own expense, and that on application being made to us for any number of shot and shells, we oblige ourselves to begin the casting of them immediately, and to employ our furnaces for that purpose only, until such number be completed ; and to deliver them at Fort William at four-fifths the price which the Hon'ble Company's shot and shells now stand them when landed at the same place :—

VII. That after the expiration of two years from the time of opening the lead mine, we allow the Company one-twentieth part of the profits which may accrue to us by the working of it, to be estimated by the profits of the two first years :—

VIII. That as the exemption from duty of our bar iron may be prejudicial to the interest of the persons who farm the *Loha mahals* in Beerbhoom, we engage to take their farms on the terms and conditions by which they are at present held.

We have now, Gentlemen, done ourselves the honour to lay our design before you : happy shall we be if it meet with your approbation, as we then

hope, and indeed make not the least doubt, that you will give us every encouragement and assistance, which may enable us to carry it into execution.

We have the honor to be, &c. &c.

T. MOTTE,

Calcutta, the 4th Nov. 1777.

JOHN FARQUHAR.

The proposal was the same day sent to Mr. Alexander Higginson and the Provincial Council of Burdwan, with instructions to report on the facts stated; whether the grant solicited would prove of detriment to the state or to private interests; to detail the statistics of the pergunna Jerriah, and to give such other information as may bear on the subject of the proposal.

Two months having elapsed without any answer being returned by the Burdwan Authorities, their memory was refreshed by a *takeed* at the suggestion of Mr. Farquhar, who from this time appears alone in the transactions connected with this speculation. I annex the reply complete:—

The Burdwan Council to Government.

HON'BLE SIR AND SIRs,—We have received your commands of the 6th instant, requiring an immediate reply to your letter of the 6th January last, respecting the proposals made by Messrs. Motte and Farquhar.

As the information you were pleased to require appeared to us of such a nature that the event of the proposals depended much upon our answer to the several points which we were directed to investigate, and as the distance of the pergunna Jerriah rendered it impracticable for us to ascertain the necessary facts without a local inquiry, we therefore stated them to Mr. Hewett at Jellda, who in consequence sent an Aneen named Seebnarain into the pergunna Jerriah, and who, you will perceive from the enclosed translation of his letter to Mr. Hewett, could not obtain any account of the amount of the Jaghire lands in that pergunna, though from the said letter it is fully evident, that the Zemindar and inhabitants appear to be pleased with the prospect of having an iron manufactory established in the country. The annual revenue to Government of the pergunna Jerriah is Ra. 2661. We have directed Mr. Hewett to use his endeavour to obtain further information, which should we receive, shall be immediately transmitted to you.

The death of the late Rajah of Beerbhoom we conceive has been the principal cause of our not having received the information required from that district. We however expect it daily, and will immediately transmit the particulars.

From the materials and information we have hitherto been able to obtain, we do not deem ourselves competent to give a definitive opinion, but as we conceive, allowing in general that the introduction of a new manufactory into any district must be beneficial to the public as well as to individuals, that the greatest difficulty Messrs. Motte and Farquhar will have to struggle with, will arise from the Jaghiredars and other landholders in Jerriah. We would therefore recommend to those gentlemen to make themselves acquainted with the difficulties which we apprehend, and to endeavour to obviate them, before they commence their manufactory, by reconciling the landholders and other inhabitants of the several districts in which they propose to be engaged.

Burdwan, the 13th March, 1778.

Report of Seebnarain to Mr. Hewett, referred to in the above.

Five days before my arrival, Rajah Mohunt Sing, with all his family and servants of every denomination, had gone into the jungles; not one of them attended me. I sent the perwanna you gave me for the Rajah by the hand of one of his people to him; upon reading the perwanna, he said that he was willing to furnish the articles of merchandize, (to wit iron,) but that he could not produce the Jaghiredars: that he would give his assistance in every thing which was required of him. This message he sent by one of his own people. If the Jaghiredars abscond, how is it possible for me to send you the accounts you require? You will be informed of every thing by the Moonsee, that not a cowree of money has been received upon account of the three Turoffs up to the month of Maug. The people are, through rascality, wandering up and down the country. Munsab Kell, &c. who went to Burdwan, have been arrived here three days. The Zemindars and all the people are pleased with the proposals for manufacturing the iron.

A more interesting report was sent in by Mr. Ramus, the Collector of Ramghur. This gentleman, at his entrance into the service, had been placed as assistant to Mr. Heatly in these districts. He was well known to his contemporaries as a devoted sportsman.

The Collector of Ramghur to Government.

HON'BLE SIR AND SIRs,—I have been honoured with your letter of the 6th instant, enclosing a copy of the proposals from Messrs. Motte and Farquhar, for casting the Hon'ble Company's shot and shells in Bengal, and

for working a lead mine lately discovered in Ramghur. In compliance with your orders, I do myself the honour of giving you every information in my power on the subject of both.

In the province of Ramghur, and in several contiguous pergunnas, an iron ore has been discovered these many years past, and worked both by the natives and by families who have long settled here merely to carry on the employ. They have ever met with great encouragement, as it has been productive of two very good consequences:—an inducement to the Calcutta merchants to negotiate in these parts; and a duty on its transportation, in which article the greatest part of the *Sayer* is comprehended, which enables the Rajah to make some addition to the Hon'ble Company's revenue: besides a consideration he annually receives from the heads of the trade for his permission and protection.

The iron is esteemed a very inferior sort, nor has the undertaking ever been carried on anywise extensively, owing to the great scarcity of labourers, (the country in general being much in want of ryots,) and their simple and tedious method of working it.

There is not a doubt from the quality of the ore, that the plan proposed may be prosecuted with the greatest ease; but not I imagine without being in some measure prejudicial to the country: as so capital an undertaking would require more workmen than these provinces could with convenience spare. Ramghur in particular severely feels that want, for there are many villages in it, and I may say pergunnas, almost wholly depopulated. The tribe of people called *Coles* are the immediate natives of Nagpore, who seldom leave that country but in small numbers, which even then proves hurtful to the neighbouring countries, unless shortly restored.

As the Company have never profited by such discovery any further than by a trifling increase of revenue, nor on the present mode does it promise any greater; should the proposal of Messrs. Motte and Farquhar appear to the Hon'ble Board advantageous, the only public detriment will be their great call for labourers, and the remission which the Rajah would apply for, to be made from his settlement, of as much as the duty and allowance annually amounts to.

With regard to private property, it would no farther be a prejudice than by obliging those to discontinue the business, who have for many years past been concerned in it, and who have made the necessary advances for a continuation; not that any of the labourers have purchased the spots, or entered into any agreement with the Rajah for his permission for any length.

The lead-mine having been so lately made known and worked to so trifling a degree, it is not in my power to give you any very particular in-

formation concerning it. The vein runs but a short way, but the appearance of the adjoining spots gives every reason to imagine it does not terminate in that one alone. The situation is southerly of Chattra, about 8 coss in the pergunna of Colrampore: the mine is at a place called Seedipore, the Jaghire of one of the Rajah's family, who concludes the mine not to be lead but *Surma*; on which account he has never taken any steps towards working it.

I should have visited the place immediately I was honoured with your letter to have more fully informed myself, did not the troubles which prevail in many places here render my presence at Chattra absolutely necessary.

Ramghur, 19th January, 1778.

On the 17th March, the Government wrote to the Burdwan Council to put Mr. Farquhar in possession of the iron mines of Pachete, and to grant him such formal authorities as may be requisite: he satisfying the Zemindars or Jaghiredars for such rights as they may possess. On Mr. Farquhar's receiving a notice to the same effect, he addressed Government in reply, begging that *Beerbhoom* might be inserted instead of *Pachete*, in the instructions to the Burdwan authorities, as the ores of Ramghur and Beerbhoom are by much the fittest for cast works: while those of Pachete on the contrary produce a brittle short iron, which, though good enough for shot and shells, is by no means proper for the fabrication of cannon. He also states his reason for specifying Jerriah, to have been its central situation between Beerbhoom and Ramghur, and concludes with *begging permission to observe that—*

“ Were he allowed to hold the iron farms at the rents which they at present yield to the Honourable Company, every source of dispute with the country people would be obviated, and the peons requisite for the collection of the duties would afford sufficient protection to the works against the hill people without a guard of Sepoys, which I am informed will otherwise be absolutely necessary.”

The Government made the requisite alteration of name, but took no notice of the concluding hint. Farquhar, however, was not the person to yield his point so easily; and without stirring from Calcutta, he not only repeated the application, but rather considerably increased its extent:—

Mr. Farquhar to the Government.

HON'BLE SIR AND GENTLEMEN,—It is with the greatest reluctance I bring myself to trouble you with a fresh application, but the many inconveniences I foresee I should have to labour under in executing your orders of the 20th February, if possessing no influence amongst the miners, oblige me once more to request that you will be pleased to grant me the farm of the duties on the Beerbhoom iron. And as this has no connection with the farms of the land, and yields to Government only 766 Rupees a-year, I flatter myself that you will not deem my request unreasonable.

I beg, Gentlemen, that you will likewise please to order that I be furnished with a letter of credit on the Burdwan Council, to the amount of five or six thousand Rupees for carrying on the works.

Calcutta, 28th April, 1778.

The Council ordered the farm of the iron mahals to be made over to Mr. Farquhar, but considered the advance unnecessary, as their orders of the 20th February, related to the experimental casting of four guns, which they now revoked.

Farquhar went down into Beerbhoom, and soon found his shrewdness sufficiently tasked by the natives, with regard to the settlements he was expected to make with the Zemindars.

Mr. Farquhar to Mr. Marriott and the Council of Burdwan.

GENTLEMEN,—I beg leave to trouble you for a few minutes on the subject of my farm of the iron mahals of Beerbhoom.

On my arrival here, I found that the rents had been raised the year before from 766 Rupees to 3,262 Rupees; at the same time it appeared by the papers of the Aurungs, that the whole collections did not amount nearly to that sum. I found likewise that the same person held the farm of the iron mahal and of the Noony pergunnah, and that at the very time when this increase was made on the mahals, he got an abatement of 4,471 Rupees on the pergunnah, by which he was in fact a gainer of 1,975 Rupees a-year.

The reason of this voluntary increase on the mahals was not difficult to discover. By this means the farmer imagined he had secured to himself the constant possession of them, as the people at the Aurungs were sensible that the sum collected was much less than this nominal jumma.

The Malgoozaree of Belputtah is estimated at 131 Rupees, on the supposition of there being sixteen *saals*, (furnaces,) but in reality there are

only eleven. Dehra Mourissa, Azimnagar, and Ahmednuggur are valued at 169 Rupees, where there has not been a single *soal*, nor scarcely an inhabitant since the famine. I would, Gentlemen, send proofs to you of what I advance, were not one of your members, (Mr. Pye,) perfectly acquainted with the facts.

I have likewise to observe, that the Governor and Council were pleased to direct that the farm should be let to me by your Board without mentioning a word of the Zemindar, as will appear by the enclosed letter. The Rajah's Dewan, however, says, that they are still included in his *doleputtah*, and of consequence that I must hold them in *cutkina* of him. I hope therefore, Gentlemen, that you will be pleased to order them to be struck out of the *doleputtah*, and to direct that the Honourable Company's Dewan receive the rents from me at the former jumma.

Beerbhoom, 15th October, 1778.

The Burdwan Council examined into these statements, and finding them true, addressed the supreme authority to the effect, that believing their intention to have been essential assistance to Mr. Farquhar, in establishing and prosecuting the business of an iron manufactory at Beerbhoom, they wished to be authorized:—*first*, to let the iron mahals to Mr. Farquhar on a fixed annual jumma of 766 Rupees; *second*, to receive the jumma from Mr. Farquhar, and to strike off its amount from the general jumma to be paid by the Zemindars; and *third*, to release Mr. Farquhar from all responsibility to the Zemindar of Beerbhoom. All this confirms the view that the property was vested in Government, who were free to improve their revenue derivable from it, the leases not being *nocurruree*, by farming it to the highest bidder, or to one at least who promised to increase its value.

It was agreed by Government to fix Farquhar's jumma at the original sum, but they did not fail to direct, that the land revenue of the Noony pergunnah should be raised to its proper assessment.

Relieved from these annoyances, Farquhar seems to have set to work with some ardour, but in a few months, we find him again importuning the Government for pecuniary assistance:—

Mr. Farquhar to the Government.

HONORABLE SIR AND GENTLEMEN,—Although you were pleased to countermand the directions you had given me last year, to make a trial

of the country ore for casting iron cannon, I have notwithstanding applied my whole attention to that object ever since. I had resolved not to trouble your Honorable Board for any pecuniary assistance, till I should be able to produce a gun as a specimen of my work. But the expense of cutting down jungle, of erecting a dwelling bungalow, and several necessary buildings for artificers, of preparing materials for forming a dam and of cutting part of a canal for supplying the bellows-wheel with water, has amounted to such a sum, that I find myself unable to go on with the work unless assisted by Government. And I trust, Gentlemen, that you will not suffer an undertaking to fail which was formerly approved by the Honorable Company, and was twice attempted to be carried into execution entirely at their expense.

I have estimated that it will require only fifteen thousand Rupees to finish the canal sluices, &c. and to erect one furnace capable of casting a 12-Pounder.

Should you be pleased to grant this sum, I make no doubt of your approving the following proposal. There are at present fifty matchlock-men maintained at the Company's expence, chiefly for the protection of the iron trade. As there is no check on their Sirdar, their number is never complete, nor is their appearance such as to keep the hill people in awe. Should you think fit, Gentlemen, to put them under my orders, to raise their pay from 3 to 4 Rupees, and to allow them 50 stand of arms, I would engage to clothe them uniformly, and to teach them to fire at a mark. They would then afford sufficient protection not only to the foundry, but to the adjacent country, which, in case of Capt. Browne's corps being recalled, will be much exposed to the incursions of the *Choars*.

Calcutta, 20th June, 1779.

J. FARQUHAR.

Government simply requested to be informed, in answer to this letter, the specific engagements into which Farquhar was willing to enter as a return for the assistance solicited. These, Farquhar lost no time in supplying:—

Mr. Farquhar to the Government.

HON'BLE SIR AND GENTLEMEN,—As success in casting guns is not absolutely certain, it is not in my power to enter into any agreement respecting them. But should I fail in bringing them to the requisite degree of per-

fection, I conceive it will still be advantageous to have a foundry always in readiness for casting shot and shells. Mr. Osborne lately applied to me for 100 7-inch shells, which he was much in want of, and which it was not thought proper to spare from the stores. And some of our officers were not long ago reduced to the expedient of casting shells of a sort of bell metal for the reduction of several mud forts in the Doab. Besides, Gentlemen, I presume it will appear to you an object of some degree of importance to cast shot for the French guns that are already in our possession, or may be taken in the course of the war, otherwise they must be absolutely useless.

I propose then after sufficient time for finishing the works being allowed :—

First.—To deliver at the New Fort such shot and shells, as may have been required, at 15 per cwt. under what they at present stand the Hon'ble Company when landed at the same place, to the amount of the sum which your Hon'ble Board may be pleased to indulge me with.

Second.—To enter into an engagement for any number of years either now or after having made good the above sum to furnish whatever number of shot and shells may be demanded on the same terms, provided they be for the use of the Hon'ble Company's garrisons or armies; but that I may be allowed to supply country ships, or their captains or owners producing a licence signed by the Military Store Keeper, or any other officer authorized by Government.

Third.—To give security for faithfully fulfilling these articles.

Calcutta, 28th June, 1779.

J. FARQUHAR.

This letter was followed up by the present of a 6lb. shot as a specimen of his casting. It seems not to have been smooth, which he accounts for by the small size of the furnace which allowed charcoal and dross to enter the mould. He states also, that the furnace proposed to be erected will contain 15 cwt. of metal at a time.

On the receipt of this last shot, Government surrendered at discretion, and the advance of 15,000 Rupees was sanctioned, as well as the transference of the matchlock guard.

Farquhar now commenced in earnest. In the report on the proposed construction of the Rajmahl Canal,* furnished to Government, [July,

* If it were permitted to turn from the history of that which has been, to that which has *not* been—a parenthetical sigh might here be offered up to the memory of this undertaking; so ably sketched, and completed in all its details—on paper. “Heu! quanto minus est cum reliquis versari quam tui meminisse!” May we hope that circumstances will draw attention again to it!

1832.] by Colonel Forbes, the following allusions to his labours occur :—

Par. 115. That good building stone may be obtained in the vicinity of the More, we are aware from the fact, that in a locality adjoining it, the late Mr. Farquhar constructed a dam, (stated to have been of an excellent quality of this material,) for the purpose of turning a stream of water over the wheel of a mill proposed to be employed by him in rolling out iron prepared on the spot from the ore. This dam was considered by the late Mr. Cheap, of Surool, to present the best specimen of masonry at the time (forty years ago,) to be met with in India.

Par. 117. Broken up for its materials, and consequently neglected, it is believed that at present no part of the dam alluded to, remains. Those who knew Mr. Farquhar, will however acknowledge, that previous to embarking in such a speculation, no man was more likely to have been cautious in his enquiries, and few better able to conduct them.

Par. 118. Certain it is that had the time and talents devoted by Mr. Farquhar to the making of gunpowder been continued to his iron works, the art of manufacturing iron would ere now have been far enough advanced, to have importantly facilitated the construction of this Canal, and many other works of public utility.

Farquhar was not, however, permitted to proceed in peace. The unexpected manœuvre of renting the *loha mahal* direct from Government, had completely disconcerted the plans of annoyance already prepared by the landholders. Continual efforts were made to surprise the authorities into some orders that might afford ground for litigation on the right to the *loha mahal*. In the meantime new aurungs were established by the Zemindar, who used the uncontrolled power possessed by landholders over the peasantry of their estates, to ruin Farquhar in every way. His people were molested, fuel obstructed, miners bribed away, and perwannas for private furnaces issued.

On the 10th May 1784, a paper of proposals was presented to the Committee of Revenue, to farm Beerbhoom from Government. It contained the following paragraph :—

“That the farmer be allowed to examine the *hustabood* of the *loha mahal* which is included in the jumma, and under-farm it to such persons as the farmer shall like.”

The proposals were rejected. In August, the Zemindar Zemaun Khan presented a Wazeeb-ul-urz, in which he treats the *loha mahal* as his property as a matter of course.

I request permission to encourage and improve the *iron mahal* in my seminary, the produce of which, provided I am allowed to attend to the improvement of it without interruption or check, will in a great measure make up for the want of assets in the *malgoozary mahala*.

Committee's Order.—The above *iron mahal* was granted to Mr. Farquhar by the Honorable the Governor General in Council, and must remain in his possession according to the terms of the grant, as he has hitherto held it.

In September, Farquhar represented the state of affairs to the Board of Revenue, and the attempts the Zemindar made to oust him. He pointed out clearly, that he was only responsible to Government for the *loha mahal*; but that no official alteration had been made in the Rajah's *sunnud* as directed in October 1778, and the annoyance had been renewed: he forwarded his *sunnuds*, such as they were. The Board referred the matter to Government, and received orders to act vigorously. A *perwanna* was despatched to Beerbhoom, forbidding the Zemindar to interfere with the *iron mahal*, ordering him to send in a list of the new furnaces built, and to produce his authority for so doing.

In 1786, new authorities having arisen, 'who knew not Joseph,' the attack was immediately renewed. The Zemindar, in arrears to Government, put down Farquhar as his debtor for the rent due on the *loha mahal* at 953 Rupees, and requested the Collector to levy accordingly. Farquhar, as might be expected, calmly denied any connection whatever with the Zemindar. The Collector was puzzled; there were records, it is true, in his office, but to disturb their venerable dust! a reference for orders was made to the Board. Farquhar's *sunnuds* were at that moment in the records of the Board, never having been returned. A call was made on him to produce them. He preserved a solemn silence. The call was repeated; he was deaf. After four letters, he wrote back to request the return of certain papers deposited with them, which being done he forwarded them back with a new *lifafah* as the papers required, accompanied by a dry apologetic epistle. Here concluded this chapter of annoyances.

On his appointment to the gunpowder manufactory at Pulta about 1789, he relinquished the iron speculation, to devote the energies of his mind to the new pursuit by which, to quote Col. Forbes again, "he afterwards amassed so enormous a fortune." He however preserved

the farm of the *loha mahal* to so late a period as 1795. It must then have reverted to the Zemindar. This personage disposed of parts of his estate at this time, and the purchasers commenced to levy the proprietary dues on the iron mines within their lots.

In 1799, the Rajah's affairs having become inextricably involved, the whole zemindary was put up to sale, and the lot containing the *loha mahal* was knocked down to Bustomchurn Hazra. The new owner immediately examined into all the aurungs of the zemindary, and disallowing the claim made by the private purchasers above alluded to, sued them for recovery of possession and restitution of mesne profits. The zillah judge decided in his favor. The decree was affirmed by the Provincial Court at Moorshedabad, who further added the singular clause, "that the property of all aurungs, mines, smelting houses, and other iron works lying within that district was vested in Bustomchurn Hazra." The decree was confirmed on a further appeal to the Sudder Dewanny Adalat, who however struck off the clause alluded to above, as irrelevant to the precise question, and not based on sufficient investigation. And so it certainly was. Every one had been at liberty to dig out ore from the mines, provided he paid the duty: nor had there been objections to his building his own smelting houses, &c. with the same proviso. The Zemindar certainly exercised a right to prevent new aurungs if he chose, as the supervision of them required a new establishment of officers. But the property of the works was undoubtedly in the private individuals, who built them in the aurung.

The quarrel was revived between the parties, and the Sudder Dewanny found it necessary to define the exact privileges which the property of the *loha mahal* now made perpetual, conveyed to its holder.

The owner of the *loha mahal* had a right to all the ore of the zemindary: the sums levied on the iron manufactured at the aurungs are viewed as the consideration or price taken by him for the ore appropriated by the manufacturers. No ores were to be manufactured without paying him the established dues. He was entitled to possession of the aurungs to secure the receipt of these dues. He was entitled to cause new mines of iron ore to be opened anywhere, on condition of making to the landholder in whose estate it lay, full and liberal compensation for the value of any land which may be rendered unfit for cultivation by opening the mine.

He shall not be entitled to establish new aurungs without previously obtaining the consent of the landholder for the land. He is also prevented from attempting to

restrain the manufacture of iron, and from attempting to exact from those concerned in it, any dues or payments which have not been customarily rendered.

The landholders on the other hand could not prevent any individual from taking ore from the *established* mines, and carrying it to any of the *aurungs* of the owner of the *mahal*, nor could they exact any fines or consideration for the ores so taken.

The decree of which the above is the substance, was passed in July 1811, by Messrs. Harington and Stuart, and completely defines the rights of the *loha mahal*: It is necessary to state, that the Collector in disposing of the *loha mahal* in 1799, did not specify to Government whether he had put up the entire *mahal*, but entered it as part of the *jaedad* of a particular district, Dehoche. The Court therefore referred the matter to the Board, (previous to their first decree,) enquiring whether they were willing to agitate any claim on behalf of Government with regard to the property of ore in the whole district. The intention of the reference was, that the Board might take some measure to subdivide the *mahal*, conveying to each lot the property of iron within its limits. No answer was ever returned by the Board, and the Court consequently limited the powers of the holder so specifically as is done above, to prevent the capricious or selfish crushing of all industry. The tenure exists on these conditions at the present day.—[*Sudder Dewanny Reports, Vol. I. 337 et seq.*]

N. B.—During Farquhar's labours, I find from an old newspaper, called *Hickey's Gazette*, published in Calcutta, that the market price of Beerbhoom hook iron was 5 Rupees per maund, Balasore hook iron at 6-8, and English at 10 and 11.

Journal of a Tour through parts of the Panjab and Affghanistan, in the year 1837. By Agha Abbas of Shiraz, arranged and translated by Major. R LEECH, by whom the tour was planned and instructions furnished. From the Secretariat of the Government of India.

INTRODUCTION.

In the summer of 1837, leaving my late chief (then) Captain Alexander Burnes at Dera Ghazee Khan, and accompanied by my fellow-traveller Dr. Lord, I paid a visit to Multan, for the purpose of collecting information of a commercial nature.

There Agha Abbas was introduced to me by my servants, as a man professing some knowledge of Farriery. He undertook the cure of one of my horses, and on our departure from Multan, followed me with it to Karabagh, where having no further occasion for his services, I wished to discharge him. He however made such offers of unrequitable services, talked in Persian phrase of "spilling his blood at my stirrup," and detailed such a list of varied accomplishments he was the possessor of, (reading and writing not included,) that I was induced to keep him on. To one of these accomplishments he knew I could bear witness, besides the cure of the horse; this was his causing loud explosions in water, by igniting a white powder on its surface, with a drop of liquid from a vial, much to the astonishment of the idlers of Multan.

At different subsequent periods, I gained from him the following abstract of his previous history:—

He was originally an inhabitant of Shiraz, the place of his birth, and was employed by Prince Hasan Alee Meerza, His previous History. governor of Kirman. On the seizure of that prince by his elder brother Abbas Meerza, Agha Abbas fled, and travelled viâ Bamm, Narmasher, Seistan, Candahar and Cabool to Peshawur, where he met an old acquaintance, Naib Abdu Samad, who was raising an infantry regiment for Sirdar Sultan Mahommad Khan, and took service under him.

He afterwards accompanied the naib on his being obliged precipitately to leave Peshawur, on account of one of Sultan Mahommad Khan's brothers conceiving an enmity against him, to Cabool, where

he became adjutant of the regiment Abdu Samad raised for Dost Mahommed Khan; and as such, was present in the action fought at Candahar on the 2nd July 1834, with Shah Shuja-ul-Mulk.

On his return to Cabool, he quarrelled with his patron and commandant on the subject of the uniform of the regiment, which he refused to wear, threw up his appointment in disgust, and retired from the service.

Quitting Cabool, he proceeded via Peshawur to Attock, where a display of his "*patakahs*," or crackers, procured him for a time employment with Cashmeeree Singh, one of the sons of Maharajah Runjeet Singh, whom he accompanied to Lahore, from which place he requested leave to return home to Persia, the value of his services not being fully appreciated, and I therefore, according to his account, encountered him on his road to Persia via Scinde.

From Karabagh we proceeded via Rawal Pindee to Attock. At this latter place, I planned and proposed to Agha Abbas this tour, which he agreed to attempt. Furnishing him with minute instructions, a small advance of money, a Persian writer and a guide, I dismissed him; and again separated from Captain Burnes and proceeded up the river Indus to explore the fords.

On my return to Peshawur from this trip, Agha Abbas, to my astonishment, again presented himself, with a doleful story of his two companions having deserted him at Rawal Pindee.

Leaving the choice of fresh men to his own discretion, and making him a further advance of money, I again dismissed him; and did not see or hear of him, until on the completion of his journey, he joined me at Candahar in the early part of 1838, with the following account of

his labours and adventures, which has been translated, partly from his original account written by his companion from his own dictation; and partly from his answers to questions put by myself, on subjects he had at first either entirely omitted, or only slightly touched on.

N. B.—It must be borne in mind, that as only the four cardinal points of the compass are used as bearing: a "North" bearing has a range from "North-West" to "North-East," and in like manner the other three points.

FORMAL.

On getting my dismissal from Major Leech, an advance of twenty-five Preparation. Nanakshye rupees, and being furnished by Mr. Lord's native doctor with a number of small packages labelled in English, containing the commonest medicines, to enable me to act at times as a *hakeem*, I proceeded to organize my party. This consisted of myself, a Party. Persian writer, two guides, and a servant; all habited and equipped as fakeers.

As some compensation for the disappointment felt by my employer at finding me at Peshawur, instead of hearing of me well on my journey, I subjoin the following information, gained during my detention at that city:—

Number of jarebs in the province of Peshawur according to the Land estimate of division of Sultan Mahmood of Ghuznee 15,76,000 Peshawur. jarebs, at the rate of 3,94,000 jarebs for each of the following four divisions; viz.

1st Division.—Yusafzyes, Bajour, Mandour, Chagharzyes, Byán.

2nd Division.—Teera, Bangash-i-Bala, Bangash-i-Paen, Bannoo Dam, Khost, Murwat.

3rd Division.—Khattak-i-Bala, Khattak-i-Paen, Wazeeree, Too-rees, Jajees.

4th Division.—Khaleels, Momands, Daoodzyes, Khalisa-i-Shareefa, Duabah, Hashnagar, Baghayat-i-Bagram.

The revenue of Peshawur under the Sadozye kings was 9,51,000

Revenue. rupees, 2,40,000 of which was distributed in church lands to the Mullahs; and the remainder, 7,11,000 reached the royal treasury.

Peshawur is said to contain 7,761 houses, of this number 5,566 are Number of Houses. private dwellings, and 2,195 shops.

On the 7th of Jamadee-ussanee left Peshawur, and passing the Barah rivulet, reached Pabbee, a distance of 6 kos.

8th Jamadee-ussanee.—Travelled eleven kos to Akorah, passing at five kos Noshurah, where there is a garrison of one Akorah. hundred Sikhs, as well as at a Baolee, (well) on the road. At Noshurah I witnessed an act of Sikh tyranny: three of the country people, Mahommadans, had been pressed to labour the day before, and at night had been shot on a pretended suspicion of being thieves. Their bodies were hung

on a gallows, and a fire had evidently been lit underneath, from the dreadful manner in which they were scorched.

9th Jamadee-ussanee.—Proceeded to Attock five kos through the Gidar galee (jackall defile) and across the river Indus; saw the body of a Khatak, suspended over the gate of the town of Khyrabad, which

Another act of ty-
ranny.

is opposite to that of Attock, and on the right bank, in company with a dog, and scorched like the body at Nosherah. He had been killed by a Sikh on some false pretence. I also witnessed the wreck of two boats when crossing the river: they contained a wedding party, who were conveying a bride to her husband; four men of the crew alone escaped. I remained four days at Attock.

13th Jamadee-ussanee.—Reached Haidaro (Hazro,) a distance of eight kos, passing at three kos the village of Haidaro. Daman, and at three and a half kos, that of Furmul-
liyan. There is a noted robber in these parts, by name Sher Zaman, who lives in the Gungar hills. He is in rebellion
Famous Robber. against the Sikhs, and one of their most deadly enemies. He seldom plunders a caffila unless he finds a Sikh in it, a single soul of which caste he never spares.

15th Jamadee-ussanee.—Proceeded four kos to Burhan, crossing the Haro river.

16th Jamadee-ussanee.—Travelled three kos to Phattargad, a dependency of Hasan Abdal. There are one hundred
Phattargad. houses on the mound, and fifty below. There are two Hindoo shops. The inhabitants have large herds and flocks, and are of the tribe of Gujar. Their supply of water is half kos distant, where there is a water mill, and forty or fifty trees. The head of the village, Malik Raheemdad. In the evening I was prevented from sleeping in the mosque, and had to content myself with the roof of the mill.

Inhospitality. I could only account for this inhospitality by sup-
posing, that my wearing my mustachios untrimmed, betrayed me as a Sheeah. To the west is the district of Futtch Jung.

17th Jamadee-ussanee.—Reached Pindi Nousherree, a distance of seven kos over a bad road, intercepted by ravines.
Nousherree. There are 150 houses. The inhabitants are chiefly weavers of coarse cotton and woollen cloths. Their cultivation de-

pende on the rains. The head of the place is Malik Ghulam Rasool, by tribe a Katar. The governor, a Sikh, by name Mán Singh, had that day forced the daughter of a Musselman goldsmith. The inhabitants rose and took to arms, killed one of Mán Singh's attendants, and severely beat the governor himself, forcing him to flee, and then took away their families to the hills, as did all the neighbouring villagers, coming down at night and watching their fields and houses, armed. The village was so deserted, that I did not think it safe to put up in the mosque, but spent the night with one of these armed parties in a house in the purlieus. I afterwards heard that the outrage here mentioned was brought to the knowledge of Runjeet Singh, but I know not whether the aggrieved obtained redress or not.

18th Jamadee-ussanee.—Made a stage of eight kos, over a road

much broken with ascents and descents, and ravines.

Tahlan.

Tahlan, a place consisting of seventy houses, and containing two Hindoos shops; fourteen Cashmeer dancing boys had also taken up their residence here. The name of the head man is Allanoor, by tribe a Jat. This place is dependent on Rawul Pindee. I spent the night with the Cashmeerees.

19th Jamadee-ussanee.—Proceeded seven kos over ascents and descents, and through ravines and jungle, in which I lost my road, and had to wait at a tank, until a herdsman coming to water his cattle,

set me right to Talan, a village on a rising ground, containing two hundred houses, fifteen Hindoo shops,

Talan.

and four of shoemakers. The inhabitants are weavers of coarse cotton and woollen cloths, and pay a revenue of 1000 rupees. There are eight wells. The name of the head man is Nasarulla. Here I was detained two nights on account of the indisposition of the Persian writer.

21st Jamadee-ussanee.—Three kos to Chotra, which is a place con-

taining 300 houses of Musselmans, and forty of Hindoos, situated partly on an eminence, and partly

Chotra.

on the bank of the river Sawan. There are forty weavers, partly Cashmeerians and partly natives of Patwar. The

River Sawan.

revenue is 1,200 rupees. The river is very deep, and not used in cultivation, which is carried on by means of forty wells. There are two head men named Habo khan, by tribe a Budhar,

and Shamee Khan, by tribe an Awan. There are no shops; the Hindoos transact business in their houses. One of my party going to make a purchase, entered into a quarrel with a Sikh, and came home wounded.

22nd Jamadee-ussanee.—Travelled nine kos to Bher, a place containing seventy houses, but no shops. The road uneven. The name of the head man Habeebulla, by tribe a Ratyal. Revenue 200 rupees.

23rd Jamadee-ussanee.—Proceeded three kos to Doulatana, a place containing two hundred houses of Musselmans and eighty of Hindoos: seven shops and three weavers. Revenue 600 Rupees. The inhabitants are of the caste Alpyals, and the head men are Kareemdeen, Nizamodeen, and Walee Mahommed.

24th Jamadee-ussanee.—Travelled six kos over bad ravines to Kamtareela, containing two hundred houses, eight Hindoo shops and twenty weavers. The place however is much dilapidated. Its revenue is 1000 rupees. The cultivation depends on the rain. There are two dilapidated mosques in the suburbs. The head man is Hadayatulla, by tribe an Awan. At this place my fakeer's habiliments attracted charity.

25th Jamadee-ussanee.—Travelled five kos to Peer Janjoot, containing two houses of Mullahs, styled "Myan," three shops of Hindoos, and twenty houses of weavers, cotton cleaners, and gardeners. The "Myans" farm the place for a yearly nazarana of two hundred rupees. This is a neat, pleasantly situated place surrounded by trees, and having a fine tank stocked with fish. I stopped here another day, and my appearance attracted suspicion of my being an alchymist: many would-be smatterers in the art came to prove me, and fortunately, I found them more ignorant on the subject than myself; as I had not, when first asked, wisely denied all acquaintance with it. One man more foolish than

Alchemy. the rest, catching at some dark hint I purposely let drop to confuse them, followed me a whole stage, intreating me to impart something of my invaluable secret to him. This I faithfully promised to do on my return, which I pretended would be very speedy.

27th Jamadee-ussanee.—Proceeded six kos, passing for three kos over estony pass to Dumbelee, a village situated on an eminence, and containing five hundred houses,

and a new bazar of one hundred shops, laid out in two streets, at right angles to and intersecting each other, the residence of Rajah Fazldad Khan, who is by tribe a Bagyal. There are eight wells with Persian wheels, and the revenue is one thousand rupees.

28th Jamadee-ussanee.—Travelled five kos to Rotas, the head man of which place is Fazldad Khan, by caste a Bagyal. He formerly furnished a contingent of 500 horse; and enjoyed the whole of Rotas, now under the rule of Rajah Gulab Sing. He enjoys 7,000 rupees, 1300 from Dumblee and 5,700 rupees from other districts, and has no power. He has now retired to Dumblee, where he resides. Rotas contains one thousand houses, and one hundred shops; has twelve gates, three to the East, five to the West, two to the North and two to the South: four of which alone are open. The district of Rotas is divided into fourteen tappas, one of which, Taliyala, under Waleedad Khan, is in jagire to Shah Zadah Karak Singh; one Shah Jahenee, under Shah Ahmed to Mishur Jesah, keeper of the royal toshakhanah; and the remaining twelve are in jagire to Rajah Gulab Singh. The revenue of Rotas was formerly three lakhs of rupees, now it only amounts to one lakh.

The twelve tappas of Rajah Gulab Singh are as follows: 1st. Tappa Shakra, under Choudree Ghulam Husen, by caste a Gujar; 2nd. Tappa Salama, under Abdulla Khan Gujar; 3rd. Tappa Doulatalee, under Azeemulla Khan Bagyal; 4th. Tappa Sikandar, under Azeemulla and Imam Bakhsh Bagyal; 5th. Tappa Choutlee, under Walo Khan Malyar; 6th. Tappa Rajoo, under Choudree Suleman Gujar; 7th. Tappa Sangoe, under Mahdee Khan Bagyal; 8th, Tappa Tirhala, under Fazaldad Khan Bagyal; 9th. Tappa Shibalee, under Mado Khan Bagyal; 10th. Tappa Eesyala, under Khuda Bakhsh, and Khuda Yar Jat; 11th. Tappa Kunar, under Lal Beg and Meerza Khan Moghuls; 12th. Tappa Pidree, under Yoosaf Khan Bagyal.

29th Jamadee-ussanee.—Travelled six kos to Sangoe, passing half way a river, the remaining half over sand through cultivation. The place contains six hundred houses and seventeen shops of Hindoos. Here Mishur Jesah has built a fine upper-storied house for his own accommodation. Outside the village, to the North, is a fort with four towers, garrisoned by twelve of Rajah Gulab

Singh's sepoy. There are eight wells. The head men are Khuda Bukhsh and Khuda Yar, by tribe Bagyals. The revenue is two thousand rupees.

1st Rajab.—Proceeded seven kos over a plain, and through cultivation to Koohar, a place containing one thousand and five hundred houses and eighty shops. Within town to the South is a small mud fort that commands it, garrisoned by eight sepoy. There are twenty wells. The head man is Noor Alam Khan, a Kutubshye Awan. The revenue formerly was 2,500 rupees; it is now 8,000 rupees.

On arriving I put up in the mosque, where soon after Noor Alam Khan and his son came to prayers. Observing an excrescence on the temple of the latter, I offered my services to remove it. This was done in a few hours after the application of a liquid I had with me. For this piece of service, Noor Alam invited me to his house and entertained me; gave one of my men a white shalakee, and on my departure, packed up two days' provisions for me. I learnt that Noor Alam had once embroiled himself with the Sikhs, by killing one of the garrison for some act of tyranny committed.

3rd Rajab.—Travelled ten kos to Kotala, over a hilly road for four kos and through a defile. There is a tank on the hilly ground. The road is then sandy, and abounding in ravines. To the West is the town of Guzerat. There are eighty four villages dependent on Kotala. The revenue is 5,000 rupees. There are two thousand and five hundred houses. The old bazar contains two hundred shops; and the new one, which has been laid out in two lines intersecting each other at right angles, seventy shops. There are sixty-seven wells for cultivation. The head man is Abdulla Khan, by cast a Gujar.

4th Rajab —Proceeded five kos to Rasoolnagar, called by the Sikhs Ramnagar, crossing the Chenab. The town is surrounded by a mud wall, and has six gates, and a garrison of fifty men, whose yearly pay is 300 rupees; but they are only paid for ten months. The government of the place is entrusted to Jawahar Singh, who receives on account of pay from the amount of the farm of the thanadaree and adalat 1,900 rupees; the whole amount being 2,500 ru-

pees; he is a native of Ramnagar. The other taxes of the place are collected by Rajah Gulab Singh. The town contains eight thousand houses chiefly of mud, and six hundred and fifty shops, seventeen mosques, and fifteen dhurmsalas and thakoor divalas. There were formerly eighty-four villages dependent on Rasoolnagar, that are now given away in separate jagires. There are eighty-four wells for cultivation, which are all distributed in jagires to Brahmins. The inhabitants are Musselmans. The revenue formerly was three lakhs of rupees. The

Former Chief. former chief of this place was Ghulam Kadar Khan, by tribe a Chatha. He has now taken up his abode

in Ramkee, and has employment in Runjeet Singh's gorchars, on a salary of 400 rupees. When chief, he could collect several thousand men, and has often opposed Runjeet Singh and his father in the field.

Here my funds ran short, and the Persian writer and cossid became clamorous for pay. Knowing that a man of my employer's, by

Diversion to Umritsir. name Nursing, was at Umritsir on a tour, having similar objects to my own; I set out for that city,

promising to return in nine days. On my arrival at Umritsir, my application to Nursing proved unsuccessful; but I fortunately encountered some Persian and Cabool acquaintances; one of them, by name Agha Rajab Alea Khan, lent me 280 rupees, and paid for 45 rupees worth of pedlery that I bought for my journey, and I set off on my return, accompanied by my creditor's uncle, who was to be repaid at Cabool. On my return to Rasoolnagar, having overstayed

Disappearance of Meerza. my time by two days, I found that the Persian writer, tired of waiting, had disappeared with my

notes I lost no time in following him by double marches; on arriving at Koohar, I found he had left the preceding night; here I was no longer able to follow him on foot. Alam Khan lent me a horse and a guide, for which I presented him with a looking glass. On arriving at Rotas, I found the Meerza in the mosque. After a deal of coaxing, I induced him to return with me to Koohar, where I paid all my companions their wages, and got them to accompany me further on my journey.

21st Rajab.—Started for Khurd Chotala, arriving in three kos at the river Jelam. The place contains two hundred houses and eight wells for cultivation. The inhabitants

Khurd Chotala.

are Moghuls and Jats; the head man is Akir Khan Moghul. This stage was five kos. The revenue is 800 rupees including the district of Jalalpoor.

22nd Rajab.—Proceeded eight kos to Jalalpoor, which is situated on the side of a hill, below which runs the river.

Jalalpoor. It contains two thousand houses and seventy shops, and has fifteen wells for cultivation. In the town is a small mud fort with four bastions, garrisoned by ten men of Rajah Gulab Singh. Revenue 16,000 rupees. The head man is Sher Khan, by caste a Janjooa.

23rd Rajab.—Travelled ten kos to Chaki Hameed, passing Sherpoor at three kos. The place contains two hundred houses

Chaki Hameed. and two shops. There are fifteen wells for cultivation.

The revenue is 1,500 rupees, including the district of Pind Dadan Khan; the head man is Rajah Futteh Khan, by caste a Jalab. On arriving at the place, the Rajah was seated in a *takya*, and conversation ensued, in which he enquired my native town, and on learning it, invited me to his house, where he entertained me, and produced spirits in the course of the evening on account of my successfully prescribing for his son's and sister's excrescences; he detained me as his guest three days.

27th Rajab.—Travelled to Pind Dadan Khan, which consists of three divisions, distant from each other from two to

Pind Dadan Khan. three hundred yards; one of which only is properly called Pind Dadan Khan; it contains three thousand houses and three bazars of about three hundred shops. There are three gates to the town, but the surrounding wall is so dilapidated, that there are thoroughfares in all directions. Outside of the town to the west, is a mud fort with four bastions, in which there is stabling for thirty of Rajah Gulab Singh's horses, and a garrison of thirty sepoy under one Takurdass. There is also a small iron gun outside the fort. There were thirty or forty heaps of salt, containing about 5,00,000 maunds, covered with a coating of mud to render them water proof. There is a large steel-yard here for weighing the salt, which is allowed to be sold no where else. The other division or suburb is called Kot-i-

Kot-i-Sultan. Sultan, containing five hundred houses, and a bazar of fifty shops. There are two gates, one to the north,

and the other to the south, and the place is surrounded by gardens. The name of the other division or suburb is Kot-i-Sahib Khan, under a man of that name. It contains six hundred houses, and a bazar of forty shops, but no gates, and there are thoroughfares on all sides. There are fifty wells for cultivation, twenty of which alone are in repair. The price of grain, &c. I found as follows: wheat six seers the rupee, ghee two and a half seers, oil eight seers, rice sixteen seers, mash one maund, cotton four and a half seers, barley twenty seers. All the timber brought down by the river in the flood, is considered government property. The chiefs are Rajah Zabardast Khan, Sahib Khan and Disher Khan, by tribe Gogids. The place is bounded on the north by the salt range, on the south by the river Jelum. The revenue, besides the six tappas, amounts to 35,000 rupees. The six Tappas are as follow:—

1st. Tappa-i-Pind Dadan Khan, generally known as Tappa-i-Jalab, Six Tappas. under Ahmed Khan. Revenue 20,000 rupees.

2nd. Tappa Ahmadabad, under Zulfkar Khan. Revenue 60,000 rupees.

3rd. Tappa Myanee, under Mahammad Khan, by tribe a Jat. Revenue 25,000 rupees.

4th. Tappa Pahra, under Noor Khan Moghul now in exile. Revenue 80,000 rupees.

5th. Tappa Barah, under Rahmat Khan. Revenue 16,000 rupees.

6th. Tappa Dannee, under Mahommed Khan, by tribe a Babad. Revenue 100,000 rupees.

There are in all eight salt mines; four only are worked: the names of those that are shut are as follow: Sardee, Neelawan, Salt Mines. Durnala, Chotana. The latter is said to contain veins of copper and lead. The inhabitants of the neighbourhood subsist by cultivation. The reason of the closing of the four mines is on account of there not being a sufficient demand for the produce. The rate at the four mines that are at work is the same. Sepoys of Rajah Gulab Singh are stationed over the mines, to prevent the smuggling

of salt, which, to any extent is punished by confiscation of property. In consequence of the heavy fines, the miners themselves live on bread without salt. The government employ fakeers as spies, to try by begging, to discover the miners,

who use salt in their bread. If the miners are found stealing a seer or two, they are obliged to extract twelve *goonees* of salt for one rupee, each *goonee* containing two and a half maunds. The government pay one rupee nominally for sixteen maunds, which quantity weighs actually twenty maunds.

The hire of carriage to Pind Dadan Khan is 1 rupee per twenty maunds from all the mines, except the Makraj one, Hire of Carriage. the hire from which is 1 rupee for sixteen maunds.

The camels on which the salt is carried are all the property of Rajah Gulab Singh. The merchants, who make wholesale purchases, get the salt at $1\frac{1}{2}$ rupee the maund, others pay 2 rupees. Formerly the tax on the salt amounted to 4 lakhs of rupees. After the visit of Captain Wade, the farm rose to 8 and 9 lakhs, afterwards to 12 lakhs, then to 14, at which I found it; as far as

Salt Farm. 25 lakhs are said to be realized. Rajah Gulab

Singh has farmed the mines from Maharajah Runjeet Singh. The labourers, who carry the salt out from the mines, are paid 1, 2 and 3 annas the day. Formerly one miner and two labourers got paid by the day one rupee;—the labourers being mostly males and females, adult and children, and the miner's own family. None but the experienced miners of the place can dig the salt. The labourers, when the salt is dug, bring it out by the aid of lamps in baskets, which they carry on their heads. Their clothes are completely blackened. The miners told me an anecdote, which was this: During Captain Wade's visit to the mines, when he was in one of the large

chambers, Rajah Gulab Singh, jealous of a close survey being made, ordered the miners to throw up salt from behind the visitor, so as to fall in showers from above about him, and then to get up a cry that the roof was falling in, so as to cause his speedy departure. This stratagem succeeded. The galleries are driven under ground to the length of several hundred yards. The

four mines that are at work are Khur Chotana, Mines at work. Korah, Kerah, Makraj. The inhabitants of the

neighbourhood of these mines do not cultivate; but depend on their labour in the mines. The salt of these mines appears perfectly inexhaustible. Each miner digs from fifteen to twenty maunds a day.

There are one hundred houses in the vicinity of the Chotana mine, and no cultivation : the head man is Shamo Khan Janjooa.

There is no cultivation at the Korah mine, and the houses are on an eminence. There is no water nearer than half kos, and that is rain water. The head man is Faizbakhsh, by tribe a Jalab. To the North is the Dannee Darra. There are two hundred stone huts in the neighbourhood of the Kerah mine ; but no cultivation. They have none but rain water.

There are two hundred stone huts in the neighbourhood of the Makraj mine, and no cultivation. There are two running streams, one fresh and one salt. The head man is Karamdeen, by cast a Gogir.

I went to most of the mines myself. They have all one entrance each, the galleries run through red earth, and the salt lies in veins which the miners follow, until exhausted, when they proceed in a fresh direction ; some of the shafts are sunk so low, that they have come upon water ; other galleries proceed so high, that light is let in from the top of the ground. Many accidents, some fatal, occur, by the falling in of the roofs of the chambers.

While I was in one of the mines, a labourer's arm was broken by the fall of a block of salt, and a general rush, headed of course by myself, was made for the open air. I saw one miner, who had lost his right arm by an accident, digging with his left.

The galleries are so dark, narrow, and winding, and so numerous, that it is impossible to traverse them without a light and guide.

The warmth of the mines is very oppressive, and the reflection of the labourers' lamps on the crystal roofs of the chamber has a very beautiful effect. The mines of Neelawan and Khur Chotata are the finest.

The miners separate the blocks by picking round the two sides and bottom, and then detach it from the top by heavy blows. The blocks generally weigh four maunds. The chips are collected by women and children. The miner's tool is a pick, of about thirteen inches long, having a sharp point at one end, and the other end about three inches square, which serves as a hammer. It is furnished with a wooden handle about a guz long.

Rájah Guláb Singh, besides the farm of the salt mines, farms the Rajah's Farm following ferries and districts, for 10 lakhs of rupees. Ferries—Bawal, Hareea, Bed, Bhera, Khushab, Saeewal, Dhannee, Ahmadabad, Jalalpoor, Meeanee, Makhad.

The districts are—Jalab, Bhera, Chakar, Bher, Yar, Saeewal, Dhannee, Pathwar, Gandapoorwal, Dalwal.

The village of Dalwal is situated on an eminence; and is the Jagire of Mishar Beleeram. It contains six hundred houses and ten shops. It was formerly included in the district of Janjooa. The Mishar has built here a fine upper storied house for his own accommodation. There are eight wells for cultivation. In the road is the village of Badshapoor, the former chief of which place was Sher Khan.

The village of Sardee is situated on an eminence, and contains one hundred houses, under a chief, Abdulla Khan, by Sardee, tribe an Awan. To the east is the fort of Dharee, built by Sardar Haree Singh, and used as a state prison. It is built on an eminence, and is very difficult of approach. Mahmood Khan Hazarah Wala died a prisoner in this fort, from State Prisoner. starvation: his sole food for twenty-four hours, being half pao flour, and the same quantity of salt. From Pind Dadan Khan to Sardee is about forty-five kos.

I passed one month in visiting these mines, and spent a good deal of money in trinkets, distributed to the head men of the Stay. different places. I also practised with success, in my profession of Hakeem; sometimes giving medicines, sometimes charms.

The village of Kahar is situated in the plain, and contains three hundred houses, and four shops; also four water mills, a fine stream, numerous trees, and the shrine of Shekh Buzurg. I have not seen a prettier place in the whole of Patwar, than this. There is a tank at the shrine, in and round which are to be seen numerous ducks and peacocks. The head man is Fatteh Khan, an Awan by tribe. The distance from Sardee to Kahar is four kos.

29th Shaban.—Proceeded six kos to Bherpoor, a place containing three hundred houses and no shops. The cultivation depends on the rain. The head men are Moghal and Samad, Bherpoor.

by tribe Awans. To the East is Kahar, to the West Thalla, to the North Pind Malik Amanat, and to the South the hills. Revenue 1,200 rupees.

1st Ramzan.—Travelled seven kos to Thalla, the jagire of Thanah Singh Malwee. The Thanedar is Danya Singh. The garrison is composed of forty Sepoys. It contains three thousand houses, one hundred and twenty shops, and thirty wells for cultivation: thirty-two villages are dependent on this place. The head men are Haiyat Khan and Mehr Khan, by tribe Awans. To the West is Thaman, to the North Awankaree, and to the South the hills. The revenue is 60,000 rupees.

2nd Ramzan.—Proceeded to Thaman, the jagire of Ram Singh of Bhakapoor, who is by tribe a Brahmin. There are one thousand houses, fifteen shops, and twenty wells for cultivation: two kos on the road is the village of Akowar. The head men are Mahammed Khan and Budha Khan. Three kos further on, is the village of Kufree. Thence three kos is the village of Sankowalee. Thence two kos is Thaman. On arriving, I was taken violently ill. To the West is the river Sawan, to the North the districts of Gheb and Dhanneec, and to the South the road to Baghan [Karabagh]. The revenue is 24,000 rupees.

3rd Ramzan.—Travelled six kos to Tarapa, on which eight other villages are dependent. There are four hundred houses, on an eminence, on the bank of the river Sawan. On the road are the villages of Koulee, Battan and Shah Mahammad Walee under Allaiyar Khan, by tribe a Sapkal. Revenue 14,000 rupees.

4th Ramzan.—Proceeded to Makhad, four kos, over a hilly road and through ravines, and two kos through a sandy defile, which is sometimes flooded, and thus impassable for a time. The road is infested by Khatak robbers, who come from the other side of the river. There are seven Mouzas, dependent on Makhad, the revenue of which is 10,000 rupees; and that of the village, custom-house, &c. the same sums. Of this Abdulla Khan receives eight hundred as pay. The houses are on an eminence overlooking the river Indus, and amount to three thousand. There are two hundred Hindoo's shops, and three gates to the village.

On arriving at Makhad, two men of Rajah Suchet Singh's came to demand two boats for crossing the troops,—in which, towards evening, I embarked with them. Gouhar Singh, of Pind Malik Amanat, with forty sepoy, kept guard on one of the gates of Makhud. The head man is Abdulla Khan, an Afghan, of the tribe of Saghuree, who can muster four thousand fighting men.

5th Ramzan.—Proceeded by water to Karabagh, which consists of a

fort and a suburb, situated at the foot of the salt range.
Karabagh.

There are three thousand houses and three bazars, containing one hundred shops. On the hills are two towers, which command the town, under Allaiyar Khan. The revenue derived from the salt is appropriated by Rajah Suchet Singh. There are twelve

saltpetre manufactories, the amount of the revenue
Saltpetre.

from which is 12,000 rupees; which is given in jagire to Malik Allaiyar Khan, by tribe a Satkal Awan. He could collect one thousand five hundred fighting men. They are friends with the men of Teeree and Sagharee, and enemies of the Khataks. To the East is Saeewal, to the West Eesakhel, to the North Shakar Darra, and to the South the river Indus. The revenue paid to the Sikhs is 5000 rupees, ten horses, and twenty camels. Rajah Suchet Singh's force had proceeded to Katkee, a fort of Ahmad Khan, situated in a valley.

Revenue.

The Khan, on hearing of the advance of the Sikh force, fled, and sought refuge in Bannoo Daman. The Rajah, finding the place vacated, returned, and took possession of the fort of Eesakhel.

I intended proceeding hence by water to Dera Ismail Khan, and thence to Tak by land; the Meerza became aware of this intention, and not liking to accompany me, left at night, and proceeded,

I supposed, via Shakar Darra and Cohaut, to his
Meerza deserts. home at Peshawar. I was much annoyed and dis-

tressed at his disappearance, until I was fortunate in procuring another writer, an Afghan, in whose company I marched, with the Sikh force, towards Dera Ismail Khan. I remained three days at Karabagh, alias Baghan. During this time news reached the Rajah, that Alladad Khan, the son of Sarwar Khan, joined by the Wazeerees, had advanced on Tak; and that the Sikh garrison, leaving the fort, prepared for the attack, which proved successful, and the Sikhs suffered a signal defeat. The town was taken and

Insurrection.

plundered, and finally evacuated, as the people of Tak would afford no assistance to Alladad Khan and his Wazeeree allies. On receiving the intelligence, Rajah Suchet Singh, instead of proceeding to Bannoo Daman after Ahmad Khan, turned off to Tak, having sent for the two guns he had left at Karabagh. On arriving within one march of Tak, the Rajah received confirmation of Alladad Khan having retired to the Wazeerees: he therefore fell back on Eesakhel.

9th Ramzan.—Reached Eesakhel, which is the name of a district ;

the village being called Zakokhel. It has a fort and seventy shops. The tribe could collect three thou-

sand fighting men. The cultivation is carried on from the river. The chief is Ahmad Khan. To the east is the river Indus, to the west the Murwats, to the North Karabagh, and to the South Khusoor. They are friends with the Sawan Wazeerees. The revenue is 30,000 rupees.

10th Ramzan.—Proceeded to Umarkhel on the road past Bandah Umarkhel. Saiyadan,—a collection of wooden and thatched houses.

At one kos beyond this, the Kuram river falls into the Indus. I

forded the former, which in some places is knee, and in others waist deep. On the other side of the river is a

quick-sand; on one side are the hills and the road to Kot-i-kafree, which is so narrow, that only one horseman can pass at a time. The Sikh force and guns were at Kot-i-kafree.

An Afghan chief, by name Shah Walee Khan, a Nyaze, was accom-

panying the Rajah: he was a brave man, and had performed good service. Suchet Singh however,

got suspicious and afraid of him, and under pretence of getting him to look out for a gun road, sent him with a party of Sikhs, who, in compliance with their secret orders, murdered him on the road, as he was saying prayers, having dismounted for a time for that purpose. The Rajah then set out for Tak, by the Kuram valley. News was brought that the Khan had been killed by the Afghan Ghazees, who were in rebellion against the Sikhs, and prowling about. The Rajah, in great apparent distress at the intelligence, ordered the body immediately to be sent for, and buried. There are two forts at Kot-i-ka-

frees, both in ruins; one below, and one on the hill: from one kos beyond the hill, Umarkot becomes

visible. The place consists of about a hundred houses, and two Hindoo

shops, situated beneath a hill. To the West is Dera Ismail Khan, to the East, Eesakhel, to the North hills, and to the South the river Indus.

11th Ramzan.—Proceeded seven kos to Khusoor, a place inhabited

by Afghans, who muster one thousand fighting men,

Khusoor.

under Hassan Khan, by tribe a Khusoor. There are

five hundred houses, and eight shops. The cultivation depends partly on the rain, and partly on the river. To the West are the hills, to the East the river Indus, to the North Eesakhel, and to the South Baloot-i-Hazrat-i-Shah Eesa. The revenue of Khusoor amounts to eight thousand rupees. The inhabitants are friends with the Murwats, and enemies of the Eesakhel. Two kos from Umarkhel is the shrine of

Shah Baloot, the road to which place is through jungle, abounding with date trees. There is a gun

Shah Baloot.

road along the river. At the shrine there are many fine trees, and a tank, stocked with duck.

12th Ramzan.—Proceeded to Dera Ismail Khan, which place need

not be described by me, as it was visited by Capt.

Dera Ismail Khan.

Burnes, on his voyage up the Indus. I here met a servant of his proceeding to Bombay, in charge of a flock of sheep.

13th Ramzan.—Proceeded four kos to Bandah-i-Saiyadan, over Bandah-i-Saiyadan. good level ground.

14th Ramzan.—Travelled six kos to Kot, over a good level road

Kot. without water.

15th Ramzan.—Proceeded seven kos to Mandye; sometimes over a

Mandye. level road, and at times over rising ground. The

amount of fighting men in the neighbourhood is two thousand, under Gul Khan and Jahan Khan. There are seven hundred houses and fifty shops. The revenue is included in Karachee. To the west are the Suryanees, to the East Dera Ismail Khan, to the North the Murwats, and to the South the Myankhels. The inhabitants are Gandapoors, of the tribe Barakhel, who are enemies of the Suryanees. On arriving, I introduced myself to Jahan Khan. In the course of conversation, he expressed his desire to procure some white "kushtah" of copper. This I showed him how to make, much to his delight, and he gave my companions three coarse shalakees, one piece of karbas, one maund of raisins and jalghozas, and two seers of Canda-har tobacco; which latter was a most acceptable present.

19th Ramzan.—Travelled six kos to Karachee, a place inhabited by Barakhels, amounting to six thousand fighting men. The place Karachee.

contains one thousand and five hundred houses and two hundred shops. There is a large grain exchange on Mandye here. There is a wall one and a half *guz* and high, round Karachee, through which there are numerous thoroughfares. There is a large tower in the town. The cultivation depends on the rain. The inhabitants are at enmity with the Suryanees, and reciprocal forays are constantly carried on. To the south toward the hills, are the Shekhans and Zarganees, and two hundred houses of fakeers, where the cultivation is carried on with running water. The headmen of Karachee are Alee Khan and Gul Mahammad Khan. To the east is Dera Ismail Khan, to the south the Myankhels, to the north Usturana, and to the west the hills. The revenue under the Sikhs is thirty thousand rupees. During my

stay, the Sikhs wanted to increase it to 50,000 rupees. The above two headmen proceeded to

Lahore, to lay a protest before the Maharajah. Two rupees a load is levied here from each merchant's camel. I had a letter of introduction to Alee Khan, from his younger brother Jahan Khan of Mandye. On my arrival at Karachee, Alee Khan came to see me, and treated me with great respect. After my interview with him was over, I took up my quarters in the mosque, where I tried to settle myself to sleep, not feeling inclined to eat from excessive fatigue. While my companions were satisfying their hunger, and I was yet awake, a man and woman presented themselves at the mosque door, wishing to see the fakeer that had arrived. On enquiring the

cause of this untimely visit, the man informed me he had a young wife at home, possessed of a devil, which he entreated me to cast out. I promised to do all I could in the morning; they went home, and returned with an entertainment of bread, ghee and curroot. In the morning, the "Pesh Nimaz," or clerk and the people came to the mosque to prayers; I was kicked up out of my sleep, to join them. I arose, and made my ablutions; but not knowing

the proper positions for the Sunnee ritual, I was very nervous. Prayers.

I however got through the ceremony, by copying faithfully the man who stood next me. After prayers, I was taken by my friend of the preceding night to his house, to cast out the devil. By this

time I had become known in the village, and the people came to me in crowds, especially women, some begging for charms to increase the attention of their husbands, others for charms to get them husbands; upon others I spat, at their request, to cure cutaneous diseases. Towards evening, they brought me the woman possessed of the devil, whom I proceeded to cure, [God pardon me,] in the following manner: Wrapping up some of the detonating powder in a paper, I gave Casting out a Devil. it to my servant to keep; then sending for the woman, and wrapping up in a piece of paper a small quantity of ashes in the presence of the people assembled, I gave it to my servant to give her, that she might deposit it in an old grave-yard for the night. I had of course before given orders to my man, to give the woman the detonating powder, instead of the ashes. The woman implicitly followed the instructions, and next morning returned with the paper, accompanied as usual, by many people. I then ordered the woman to place the ashes on a stone, and putting a rod of iron into her hand, directed her to watch a sign from me for striking the ashes: I then commenced vehement incantations, becoming very excited at times, until at the given signal, the ashes were struck, and a loud report, as of a matchlock, succeeded, when I ended by exclaiming, "I have shot the devil; now you are cured." The populace were astounded, and loaded me with their attentions. I remained three days at Karachee, and on my departure, presented the woman with a looking-glass I had purchased for two rupees, telling her to look at herself in it, whenever the devil felt again inclined to return. To the east of Karachee is Dera Ismail Khan, to the west the hills, to the north Usturana, and to the south Tak.

23rd Ramzan.—Proceeded seven kos to Rohree, a place containing eight hundred houses and three Hindoo shops. The Rohree. fighting men amount to one thousand. The cultivation is carried on with running water. To the east is Dera Ismail Khan, to the west the Hills, to the north Karachee, and to the south Tak. The headman is Mahammad Raheem Khan, by tribe a Barak-hel. The inhabitants are enemies of the Suryanees. The houses are in a fort, and the ruler distributes justice on a low platform outside. On arriving, he refused me entrance, and I put up at a running stream near at hand, and having cooked a pillau, invited the

governor to join us: upon this he insisted on my occupying a seat near him and partook of the fare, and in the evening sent me a "*lyaf*" or coverlid; under which, owing to its inhabitants, I got no rest.

24th Ramzan.—Proceeded nine kos to Tak. The chief Alladad

Tak. Khan, who was then an exile, is by tribe a Doulatkhel. In

his late incursion, he burnt all the neighbouring villages. At Tak [i-Sarwar Khan] I found the following Sikh force; viz. Jemedar Mahommed Hashan, and one hundred sowars, and five zambooraks. Chet Singh Kumedan with a like detachment. Lena Singh, with one hundred ghorahchars. Saidar Ram Sing, with a like number, one hundred other ghorahchars, dispersed in small bodies; six hundred infantry of the regiment of Futteh Singh Aloowala, one gun. Nadir Alee Khan, Baloch Khan, and Mayan Khan, with forty horse, besides other footmen.

There is a smaller fort within the fort of Tak, called Narinj Kilah,

Citadel. within which there are three wells: and inside the outer

fort gate are seven guns and twenty-five zambooraks, all manned. Guns can be mounted on all the four bastions of the Narinj Kilah, to receive which, there are "damdamas." The breadth of the wall is four *guz*. There is an "alampana" or *fausse braie*, and a ditch, nine *guz* broad. There are two gates to the Narinj, one to the east near a garden, another to the west. There are seven gates to the outer fort, called respectively, Nourang, Peer Dastgeer, Haz-

Gates. rat Eesa, Sarbanan, Mooree, Panch Tanpak, and Maranee. The

fort is surrounded by gardens, around which again there is a wall having three gates. Three sides of the fort are surrounded by broken inaccessible ground. The only good approach is from the direction of Dera Ismail Khan. The Doulatkhels amount to two thousand fighting men, and are enemies of the Wazeerees. In the whole country of the Doulatkhels, there are two running streams; one called Tak, the other Kamal. To the east is Dera Ismail Khan, to the west Daraban, to the north the Myanees and Wazeerees, and to the south the Gandapoors. The road from this to Cabool is almost impassable, from fear of the Wuzeeree plunderers; the general road taken by the

Road to Cabool. Luhanee and other merchants, is from Daraban. The cultivation is carried on by running streams. The

revenue in the time of Sarwar Khan, was 23,000 rupees. The produce no doubt amounted to 200,000. It now costs Value to the Sikhs. the Sikhs more than it is worth.

The fort of Fattchgur is dependent on Tak, and is a very strong place, situated on an eminence. It belonged to Alladad Fattchgur. Khan, who entrusted the command to Anayatulla Khan, one of his most trustworthy men. On the Sikhs gaining possession of Tak, this man surrendered his trust to them, and was again installed in the command. The fort is situated to the west of Tak, at the entrance of a valley. The inhabitants of the neighbourhood are Myanees. The fort is surrounded by a *fausse braye* and a ditch, nine *guz* wide; two of the bastions are fitted for bearing guns. There are two wells inside. The inhabitants do not amount to more than two hundred. To the east is Tak, to the west the Myanees, to the north the Gandapoors, and to the south the fort of Thattee.

5th Shawal.—Travelled six kos to Mameer, a place containing twenty-five houses, situated at the base of a hill. Mameer. The inhabitants are all robbers. It is a dependency of Tak. These people act as guides to the Myanee and Wazeeree robbers, who make excursions into the Tak territory, and receive a share of the plunder. As the main road to Shinkee was impassable, being infested by thieves, I determined on going in company with my new Persian writer, a man of Alladad Khan's, and a guide procured from Mameer, by a hill bye-road to Bandah-i-Saiyadan, where I arrived

on the 6th Shawal.—There is a shrine here of Shekh Bandah-i-Saiyadan Kalamkar, and the Wazeerees bring offerings of wheat, and heap it on the ground, and no thief is bold enough to steal any of it. The Sayad alone, in times of scarcity, when they cannot procure it

elsewhere, make indents on the store. The road is Sacred Granary. hilly, and for some distance through a defile. There are fifty houses of Sayads. On arriving, I put up in the mosque, where one of the Sayads brought a son of his to be cured of a cataract in the eye. This I promised to do, if he would allow his son to accompany me to Shingee, which he did. The length of the stage was seven kos.

7th Shawal.—Proceeded six kos to Chandoulah, over hills through defiles, and crossing a stream that flows from Kanee-guram to Tak, at least twenty times. The place is Chandoulah.

situated at the entrance of the Wazeeree valley, and contains about one hundred houses. I took up my quarters in the mosque as usual; my writer had an acquaintance here who entertained us. The hills abound with iron, that the people work and take to Kot-i-Singee.

8th Shawal.—Set out with the intention of proceeding to Aleekhel. The road was through jungle, defiles, and over hills. On arriving at a stream I halted, and made preparations for cooking, when a party of six men, apparently robbers, presented themselves, and par-

Meeting with Robbers. took of the fare, and smoked our *chillums*. They

then questioned us as to our homes, and the object of our journey. I replied, that we had come from Mecca, and were proceeding home to Baghdad. They then asked what we had with us. I replied we were poor Hajees, and had nothing but a few medicines. These they requested to see. On my complying with their request, the English writing on the packets attracted their attention, and demanded

Discovery.

what the strange character was. I replied that they were marks of my own invention, and mere help to my memory, marking the different medicines. They became suspicious, and opening my bundle, extracted the articles that pleased them most, such as penknives and scissors. They then bound us and took us to Khel-i-Masaoood, beating us all the way, and on our arrival, sent for the village Akund and shewed him the inscriptions. He immediately decided that we were Feringees, in which opinion the Akhund confirmed them also, on reading the notes of the road my Persian writer had. We were very badly treated during our captivity, which lasted twelve days, and were daily threatened with death. They endeavoured to

Captivity.

make my companions give evidence against me, by beating them apart, and promising them freedom if they would confess. During their punishment, they would allow I was a Feringee, but when it ceased, declared only I was a *fakeer*. When we were alone, I warned my companions not to peach, as we should certainly all be killed. A man of Kheli Masdood went one day on an errand to Kot-i-Singee, the head-man of which place was Dilasa Khan, who on enquiring the news, was informed, that some Feringees had been discovered and confined in his village, and they were thinking of killing them. Dilasa Khan being a great friend of the late Mr. Moorcroft, on hearing this, immedi-

Mr. Moorcroft. ately set out, and arrived where we were confined,

and had us released, and our property restored; and taking us with

Release. him seven kos to Kot-i-Singee, entertained us three days, killing a sheep for us every day. Here we

witnessed a peculiarity in Wazeeree hospitality. The sheep, when

Hospitality. killed, is brought with all its eatable appurtenances and placed before the guest, the villagers assemble

round, and every one helps himself to the pieces he likes, which are

“*kababed*” [the breast always,] and the rest is put in a pot to boil.

It was the 21st Shawal when I arrived at Kot-i-Singee. The num-

ber of fighting men is six thousand, who acknow-

Kot-i-Singhee. ledge no rule. The headman is Dilasa Khan, by

tribe a Massaoodkhel Singee Wazeeree. To the east is the Ghola-

ree Pass, to the west the hill, to the north Kaneeguram, and to

the south Tak. There are nine blacksmith's shops, and three of

Hindoos. There is a mud fort, containing four hundred mud houses

and woollen tents. Dilassa Khan entrusted me with a letter to Capt.

Burnes, and furnished me with a guide to Cohaut, who ran away

after having accompanied me three kos. The inhabitants are enemies

of the Tak people. Dilasa Khan is suspected, not without reason,

of being in the pay of the Sikhs. During my stay, he pointed

out an eminence on which Mr. Moorcroft promised to build a

fort for him. The kindness he experienced from the above gentle-

man, would at any time incline him to serve the British Govern-

ment.

25th Shawal.—Proceeded seven kos to Kot-i-Aleekhel, passing

Kot-i-Alec Khel. often through water and jungle, and a Pass, which ex-

tends to Kaneeguram. The Aleekhels muster four

thousand fighting men. To the east is Thattee, to the west Bamroo,

to the north the Ahmadzyes, and to the south the Myanees. I put

up in the mosque very tired; scarcely an hour had elapsed when a man

presented himself, saying his son had a bad ball wound, and wanted

me to attend him. Being tired and wanting a guide, I told him I

had not now the requisite apparatus, but if he would send some men

in charge of his son on with me to the next town, I would try my best.

To this the man would not consent, and took his leave. The road

was very bad, and everywhere were veins of iron, and signs of

Iron. where it was being, or had been, worked.

26th Shawal.—Arrived at Kaneeguram, which is the capital of the Kaneeguram. Wuzeeree country. The cultivation is carried on by running streams. The inhabitants are Sayads, who are the spiritual fathers of the Wuzeerees. The houses are upper-storied, and amount to four hundred. There are two large towers for the protection of the town. There are thirty-two shops, as follow; viz. sixteen of Hindoos, seven blacksmiths and cutlers, three goldsmiths, two scabbard makers, and four dyers. The headmen are Durvesh Khan, Sarwar Khan, Mulook Khan, Abdukahman Khan, Raim Khan, and Noor Khan. The amount of fighting men is five hundred. The Sayads are farmers; the Wazeerees are independent, and are mostly herdsmen. They are at enmity with the neighbouring tribes, but internally united. To the east are the Khataks, to the west the Gholaree Pass, to the north Dour, and to the south Tak. The cultivation is not at all proportionate to the supply of water; the stream that runs to Tak has its rise here. To the west, in the Pass, is a very lofty and extensive black mountain, called Peer Karal, in which I was informed copper is to be found. Disputes between the neighbouring chiefs led to the mines of this mineral being closed. The people also believe in the existence here of stones impregnated with gold. I much wished to visit this mountain, but was prevented by the cold, and want of a guide. Throughout the hills iron abounds, and there must be no less than fifty or sixty manufactories. The price of unwrought iron is 3 rupees Mehrabee the pukka maund. In Tak the Wuzeerees sell the quantity for 4 and $4\frac{1}{4}$ rupees. Merchants purchase it from the Wuzeerees for $2\frac{3}{4}$ and 3 rupees. Beyond the Peer Karal hill, coal is found, which is called "Sang-i-momyie." The method of extracting the iron is as follows: A pit is dug, about three and half feet in diameter, and the same in depth, the top of which is closed with a perforated cover of clay: over this is spread a coat of charcoal, which is made in great quantities in the neighbouring hills; over this the stones containing the iron are heaped, being first broken small, and over them again charcoal is heaped; round this heap five or six bellows are applied. The iron falls through the perforated cover into the pit, from which it is extracted to be wrought before being sold. The iron in being wrought, loses three-quarters and five-eighths

of its weight. This process is alone undertaken by blacksmiths. The Wazeerees are divided into four classes; viz. Masaoodyzes, Ahmadzyes, Alleezyes, Bahlolzyes. The headmen of the Ahmadzyes are Bano Khan, Shekh Bayo Khan, Painsa Khan, Neko Khan, Kazim Khan, and Pasham Khan. The fighting men amount to four thousand. To the east they have the Khattaks, to the west the Masaoodyzes, to the north Khost and the Torees, and to the south Bannoo. The headmen of the Alleezyes are Mahommed Asan Khan, Durvesh Khan, Sarfraz Khan, Mahommed Khan, Sayad Shah, Mulla Ghaib Khan, Khudadad Khan, Tooran Khan, Wilayat Khan, Sarwar Khan, and Hatim Khan. They muster from four thousand to four thousand and five hundred fighting men. To the east they have Thattee, to the west Bannoo, to the north the Ahmadzyes, and to the south the Myanees.

The headmen of the Bahlolzyes are Nasrat Khan, Sair Khan, Salamat Khan, Deerut Khan, Bazzul Khan, Alee Mahommed Khan, Mulla Nadir Khan, Meer Allam Khan, Dost Khan and Gul Rez Khan. They mustered three thousand and five hundred fighting men. To the east they have the Admadzyes, to the west Kanceguram, to the north Dour, and to the south Thattee.

29th Shawal.—Proceeded nine kos to Manzakee, over a hilly road, through a jungle. It is situated between two streams, and consists of forty houses; beyond the stream to the south, are other thirty houses. There is a water mill in play. The headman is Mushkeen Khan, by tribe a Shahookhel. Number of fighting men one hundred. They are at enmity with the people of Dour. I put up on arriving in a blacksmith's shop.

1st Zeekadah.—Travelled seven kos to Kamsar over a hilly road, and through a jungle. On descending from one of these hills, I stopped for a short time on the borders of a stream, with the intention of taking some refreshment, when I observed a party of four men advancing towards me; fearing they might be thieves, I had recourse to my detonating powder, and placing some on a stone at my feet, awaited their approach, when they drew near, in attempting to rise, I rested my walking stick on the powder, exclaiming “Ya Allee mad-dat,” (help! oh Allee.) The usual explosion ensued, and the thieves, for such I still suspect them to have been, ap-

proached me with great reverence, and requested that I would bless them by clapping them on the back. The head man of Kamsar is Noor Khan. The number of fighting men is eighty. They are at enmity with the people of Dour. The place is surrounded by hills, and is itself situated on an eminence. There are three Hindoo shops. On arriving I put up at the *mehman khanah*, and introduced myself. They brought a bed for me, on which I seated myself. They then asked me if I had dined, I replied that I had now entered their country, (a hint that I depended on their hospitality,) one of them immediately rose, and brought some rice and butter milk. While I was dining, a Hindoo presented himself, and complained that he had a wife, who had presented him with three children, but was dumb; I suggested, that she must

Dumb Woman.

be possessed of a devil. He insisted on my accompanying him home. This I did, saying that I would put a copper pice and a rupee into a vessel of water, and that one or the other would leap out; if the former, he must distribute a fowl and some copper change in charity; if the latter, a sheep. A vessel being produced, I proceeded, with the aid of my servant, to discolour the

Jugglery.

water, in order to conceal the contents which consisted of a steel spring, confined by means of a piece of rock salt, on which I placed the rupee during my incantations. The salt of course in time melted, and the spring expanding, jerked the rupee out of the water. The sheep was accordingly given me to sacrifice, as well as the charmed rupee; and in return, I gave the dumb lady a looking glass, in which she was punctually to look at herself, whenever threatened with a return of the dumb devil, which I assured them would either quit her after seven days, or seven weeks.

3rd Zeekadah.—Proceeded to the valley of Dour, which is embosomed

Dour. in hills. The cultivation is carried on by running streams.

There are about one hundred, or one hundred and fifty different forts and villages in the valley. Three of the forts are large, the residences of the Malik. They are Thattee, Ismailkhel, and Hyderkhel.

The headman of Thattee is Mahommed Khan, by tribe a Khattak.

Thattee. There are six hundred houses, and sixty-five Hindoo shops.

The number of fighting men is one thousand. They are at enmity with the Wazeerees. To the east are the Haasankhels, to

the west, the Utmanzyes, to the north Khost, and to the south the Wazeerees.

The headman of the Moosakhels is Alee Khan. The fort of Moosakhel and suburb contain seven hundred houses, and one hundred Hindoo shops. From Thattee to Moosakhel is five kos. The number of fighting men is three thousand. They are at enmity with the Wazeerees. To the east are the Hasankhels, to the west the Utmanzyes, to the north Khost, and to the south the Wazeerees.

The headman of the Hyderkhels is Kamal Khan. The town of Hyderkhel. Hyderkhel contains three hundred houses, and thirty-five Hindoo shops. The country between Moosakhel and Hyderkhel is particularly fertile and well watered. The distance is six kos. There are two Sayads here, who are much looked up to. They are Furmals of Kaneeguram; their names are Jawaher Shah and Ghareeb Shah. All disputes are settled in their presence, and they draw no contemptible revenue from the district. In every field in the valley, there is a tower built for its defence. They are much divided among themselves. The fighting men amount to two thousand. They are friends with the men of Khost and Bannoo, and enemies of the Wazeerees.

There is a peculiar tribe in the hills of Dour, that shave one eye-brow, one mustache, and half the beard; and apply antimony with the finger above and below the eye, so as perfectly to disfigure their faces. The men of Dour assemble once a week, at an entertainment got up by subscription: every one attended by his catamite boy, and during the repast, the most disgusting attentions are paid to them, and most revolting caresses received from them. To the east are the Hasankhels, to the west the Utmanzyes, to the north Khost, and to the south the Wazeerees. The people of Dour are perfectly independent. The distance from Moosakhel is six kos.

20th Zeekadah.—Proceeded eight kos to Usmankhel, which is a dependency of Khost. The inhabitants who are robbers, live in hair tents, which are thirty in number. They pay no revenue. They are migratory. The road to this place is difficult and hilly.

21st Zeekadah.—Proceeded twelve kos to Khost, having procured Khost. a guide over a difficult hilly road. The cultivation is carried on by running streams; but on account of the unquiet state of the neighbourhood, half the land is waste. There are three hundred and fifty houses, and thirty-five shops, The headman is Sahibzadah

Ahmed Shah, [a holy character,] a descendant of Peer Holy Character.

Dastgeer, Shakar Khan, Nooradeen Khan, Ismail Khan and Abdulla Khan. The fighting men amount to five thousand. They are at enmity with the Wazeerees. They are ryots of Dost Mahomed Khan of Cabool. To the east are the Wazeerees, to the west the hills and the Jadrans, to the north the Toorees and the road to Kuram, and to the south the Thattee hills. The revenue amounts to 30,000 rupees, of this sum 5,000 rupees are distributed to the Malik, the remainder is given in jaghire to Alladad Khan, the son of Sarwar Khan of Tak, who sought refuge at Cabool, on losing his pos-

sessions; and to whose son, Dost Mahommed gave a daughter in marriage. I presented the Sahibzadah Dost Mahommed. with a penknife and a pair of scissors, and he in return furnished me with a guide.

25th Zeekadah.—Return to Usmankhel, and retracing my steps via Hyderkhel, on the 27th Zeekadah arrived at a town on the boundary of Bannoo, the headman of which place is Dilasa Khan, surnamed the Ghazee.

The district of Bannoo is flat, and fertilized by running streams, partly from one which comes from Dour, and partly from the Bannoo. Kuram river. The district is highly cultivated. There are full four hundred, if not five hundred forts and villages in the district. The district is divided into four tappas, or rather five; viz. Eesakee, Meerce, Suryanee, Khamsee, and Chandookhel.

The headman of Eesakee is Dakas Khan, and it is again subdivided into four tappas. The fighting men amount to four thousand.

Eesakee. The revenue amounts to 22,500 rupees. The four tappas are Longarkhel, under Dakas Khan; Nukradeenkhel, ditto ditto; Siknadarkhel, ditto ditto; and Shamseekhel, under Kalandar Khan, who resides at Kalandarkhel. Dakas Khan resides at Bazar, which is the Bazar. capital of Bannoo. It contains five hundred houses, and eighty Hindoo shops, five dyers, and five blacksmiths. This place is

called Bazar, because all the inhabitants of Bannoo come here to market.

The headman of Meeree is Meer Baz Khan. It is sub-divided Meeree. into six tappas. The fighting men amount to 3,000, and the revenue to 30,000 rupees. The six tappas are:—

Kakee, under Shahbaz Khan.; Obad, ditto ditto; Hasankhel and Mamookhel, under Hyder Khan; Naswarkhel under Ghazee Khan and Ameer Khan; Sarkee under Meer Baz Khan; and Mandyoo under Alam Khan.

The headmen of Suryanee is Dilasa Khan Ghazee. It is sub-divided Suryanee into five tappas. The fighting men amount to three thousand, and the revenue to 25,000 rupees.

The five tappas are:—

Daood Shah, under Dilasa Khan Ghazee; Mandakhel, under Bazeed Khan and Meer Kalam Khan; Walakdeenkel, under Zapt Khan; Ghazeekhel, under Zahar Khan; and Hek-mis-kee, under Sekandar Khan.

The headmen of Shamsee are Jangee Khan, Meerash Khan, and Jafar Khan. The fighting men amount to two thousand, Shamsee. and the revenue to 22,500 rupees. It is sub-divided into four and half tappas, as follow:—

Barkhajaree-Sarkhajaree, under Janghee Khan and Jafar Khan; Ismailkel and Meerakhel, under Sirdar Khidr Khan; Waleekhel and Sikandarkhel, under Meer Wais Khan; and Daree-Deeree, under Namwar Khan and Gada Khan.

The half tappa Meetakhel and Fattekhel, under Sirdar Ameer Khan.

The chief of the Chandookhelan is Sirdar Sher Mast Khan, noted Chandookhelan. throughout Bannoo for his hospitality. Ahmed Khan, Refuge, the ex-chief of the Eesakhels, has sought refuge here.

Dakas Khan is, however, the chief of the greatest note in Bannoo. The number of fighting men is four thousand. This district is much deserted, on account of the Sikhs levying three-sixteenths of the produce as revenue.

The cultivation of the district consists of turmeric, sugar-cane, rice, cotton, wheat, barley, and juwarce

The inhabitants of Bannoo, denominated Bannoowals, are friends with the people of Dour, and enemies of the Wazeerees. They have

also, to a great extent, feuds among themselves; and are ryots of Runjeet Singh, but very unsteady ones; and their revenue is generally collected by large detachments. To the east and north are the Khattaks, to the west the Wazerees and Dour, and to the south the Murwats.

I remained on the boundary of Bannoo two days, and at Chandookhel three days; the distance between the places being five kos.

2nd Zeehijjah.—From Zakookhel Chandookhelan, proceeded eight kos to Umarchel, a dependency of Murwat, over a sandy road, with the exception of the two first kos. The place contains thirty mat huts; their drinking water is two kos distant. The cultivation depends on rain. Each house subscribes a vessel for the mosque and for strangers.

3rd Zeehijjah.—Proceeded to Murwat to the village of Lakkee. Lakkee. The cultivation depends on the rain. This is the principal town of Murwat. A small portion of the Kuram river is applied to cultivation. There are three tribes of Murwats.

Bahram, under Feroz Khan and Muhablat Khan, resident of Ghuznee-Bahram. khel; amount of fighting men two thousand.

Dreplarah, under Noora Khan and Allaiyar Khan, resident of Sangookhel and Asakkhel; amount of fighting men two thousand.

Moosakhel, under Hyder Khan, resident of Adamzye, and Cashmeer Khan, resident of Walce; amount of fighting men one thousand and five hundred.

The former amount of the revenue of Murwat, in the time of the Revenue. Sadozyes, was 18,000 rupees, and in the time of the Nawabs of Dera, 50,000 rupees.

The town of Lakkee is situated in the division of Bahram; but the Lakkee. whole three divisions dispute about their claims to it. The Maliks of Lakkee are four in number; viz. Deewana Khan, Gouhar Khan, Jahan Khan, and Alam Khan. The town of Lakkee is composed of four hundred houses and twenty shops, three dyers, and two blacksmiths. They are now ryots of Runjeet Singh, but compulsory ones, and their revenue is only collected by detachments of Sikh troops. They are friends of the Bannoowals, and enemies of the Wazerees.

Proceeded on leaving Lakkee to Lachee Teeree, a dependency of Lachee Teeree. Cohaut, under the rule of Runjeet Singh, a jaghire

of Sultain Mahommed Khan Barikzye. There are only four salt mines in the whole Khattak country: two in the district of Lachee, called Malgeen and Cheena, and two in that of Teeree; the salt from the latter is black and mixed with small pebbles. That of the Lachee mines is of a superior quality. The district of Lachee is farmed by Saidan Shah, for 22,000 rupees. In the district are included the mines, Ismailkhel, Meer Ahmadkhel, and Malgeen. The pay of Saidan Shah is five thousand rupees, and his jaghire is in Cohaut in the district of Sher Khan. He has in his employ twenty horsemen.

The mines of Chotara are known by the name of Maheekhel and Karz Kurooz, and are farmed by Shahbaz Khan, Akarkhel of Teeree, the capital of the Khattak country.

The price of salt in Teeree and Chotara is twelve ass loads, or eight bullock loads for one rupee of the Sultan Mahommed Khan's coinage; ten pice is levied on every bullock load, and eight pice on an ass load; one pice the load is levied by the miner.

One-fourth of the government duties on Lachee salt is given in pay to Malik Nadir and Bahadur, who superintend the whole districts of Khurm and Thattee. In the winter, Afghan merchants export thousands of camel loads of this salt to Cabool, Jelalabad, Peshawur, and Bajour.

The salt of Chotara is exported only to Bunoo, Khost, Murwat, and the Derajat.

The fighting men of Lachee amount to three thousand. Two kos Naptha. from Lachee are three hillocks of yellow earth, in which are flat flakes of stone, which burn. There are also two springs of naptha.

Teeree, which is the capital of the Khattak country, has a fort with four bastions, which is situated on an eminence. It was repaired by Sirdar Attar Singh Aloowalya, who conquered Cohaut. The whole of the district of Teeree is managed by Shahbaz Khan, son of Sadullah Khan, Akorkhel, who has farmed it from Sultan Mahommed Khan, for 30,000 rupees. His own pay being 3,000. He furnishes one hundred and ten horsemen. There are three tappas dependent on Teeree; viz. Darra Barak, Chotara, and Shakar Darra. The fighting men of Teeree amount to three thousand.

The cultivation depends on the rain, and their drinking water is from a spring, which becomes brackish soon after issuing from the *Goitre*. ground. The men and women here are all afflicted with the *goitre*, which they say, arises from the salt quality of the water.

The people all dress in red. They are gradually, under the rule of Shahbaz, beginning to reinhabit the suburbs of the repaired fort, called *Narinj*, which contains one hundred houses; the other old fort contains one hundred and fifty.

On arriving at Teeree, I put up in the mosque, when shortly after, a very good looking woman presented herself, bringing with her bread and halwah, which she presented to me. Then taking hold of my skirt, begged me to attend to her petition. This was to give her some

charm, to attract the attentions of her husband, which had

for the past six months been divided among his other wives, to her entire exclusion. I ordered the Persian writer to make out the necessary charm, and gave it to her, as well as a piece of sugar-candy, which I charmed by whetting it with my saliva, while I repeated supposed incantations over it. This she was to give her husband to eat. Whether he was pleased with the perhaps unusual attention and fondness of manner of his wife, or how it was, I know not; but she

returned to me next morning, with a present of a sheep, much pleased with the effect of my charm.

My fame for charms soon spread, and fearing that I should have hosts of female applicants, and that some of my charms might not prove so efficacious as the first, I was glad to take my departure.

On leaving Teeree, at the distance of three kos at the entrance of the *Darra-i-Barak*, is the ruined fort of *Rajnagar*, generally known as *Shahbazar*. It is of a square construction, situated on

an eminence, and has a very large tank inside. The position is a very strong one. Coal is found in the *Darra-i-Barak* in the bed of the ravine, by digging. It is brought here by

floods, and there is no bed of it. To the east of *Rajnagar* is the *Lachee* road and the *Darra-i-Barrak*, to the west the *Darra-i-khattak*, to the north the *Khattaks*, and to the south the *Khattaks*, *Shakar Darra*, and *Baghan*.

Leaving Lakkee, I proceeded seven kos to Latamar; a dependency of Chotara, over a bad road, without water. The headman is Daraz Khan.

From Latamar I proceeded seven kos to Karak, over hills and Karak. through defiles; drinking water is procured from a spring, which turns brackish at three or four paces from where it leaves the ground. The headmen are Sangee Khan, Danial, and Darab Khan. This place is pleasantly situated in a valley. On arriving, I put up as usual at the mosque, when two men, father and son, presented themselves, and requested my aid in the following matter:—

The son had sold a cow for 20 rupees and given the money to his mother, who said it was lost, and he wanted to know, whether his mother, sister, or wife, was the thief. I enquired if any one else had been in the house. He replied in the negative. I enquired of the mother, where she had laid the money? She replied underneath the clothes. I then proceeded to arrange my conjuring apparatus of the bowl of discolored water and steel spring; and writing the names of the five members of the family each on a separate slip of paper, confined each slip to a copper pice, by a layer of dough, and placed one of the pice on the spring. This in due course of time, by the process before described, was forcibly ejected from the bowl. Taking it up, and stripping off the dough, I proceeded to read the name. Then wisely shaking my head, I said, “Now I know the thief, who shall be exposed, if the money is not restored before morning.”

At midnight, I was gently awoke by the complainant's wife, who confessed to the abstraction of the money, and promised to do any thing, if I would not expose her; at the same time she counted into my hands the missing 20 rupees. In the morning, when the husband came to see me, I presented him with the rupees; saying, I had the greatest trouble in recovering them from the genii who had taken them away. Some of them were pressed on my acceptance, but I refused them, in order to sustain my character; but the good people would not be content, until they had cooked and packed up two fowls for my journey, on which I was accompanied for two stages by the grateful owner of the rupees.

From Karak I proceeded five kos to Meetakhel, over salt hills. Meetakhel. The headman is Alladad Khan.

From Meetakhel I travelled six kos to Zamankhel, over salt hills
Zamankhel. of a red colour.

Thence I proceeded four kos to Kuharkhel, over salt hills and
Kuharkhel. through a jungle, and the next day six kos to Teeree.

From Teeree I proceeded five kos to Mameekhel, over a high Pass,
Mameekhel. impracticable for artillery.

Thence I proceeded seven kos to Seemaree over a hilly tract; one
Seemaree. division of this place, Seemaree-i-Paiyeen, is dependent
on Hangoo. The headman is Mazulla Khan. From this place I had
intended to visit Hangoo; but my funds being expended, and hearing
from Meerza Samad, the son of Meerza Abdu Raheem, who had come
to collect the revenue for his master Sultan Mahommed Khan, that a
Persian acquaintance of mine, by name Agha Mehdee Khan of Ispa-
han was at Cohaut, I determined to proceed to that place, to procure
his assistance. Meerza Samad entertained me with dancing and
wine, the evening I staid with him.

From Seemaree I proceeded six kos to Jabba, which is dependent
Jabba. on Cohaut, over a high Pass, on the top of which is a tank.
The whole of my stay in Lachee and Teeree, amounted to nine
days.

12th Zeehijjah.—Arrived at Cohaut, and proceeded to the house of
Cohaut my acquaintance, Agha Mehdee. Here the Persian writer
became clamorous for pay. I silenced him, however, with some trou-
ble, by promising to return from Peshawur with the necessary funds,
for which place and purpose I accordingly made my arrangements for
starting.

On arriving at Peshawur, I took possession of the manuscripts I
Digression to Peshawur. had sent from Tak by the hands of my cossid,
whom I met here, and lost no time in making search
for a fresh Meerza. I at last procured one, by name Safdar Shah,
through the aid of Captain Burnes' Cafila Bashee, a resident of Peshawur;
who after a great deal of hesitation, lent me some money, and
took the security of Safdar Shah's father, that he would not desert me.

Returning from Peshawur, I arrived at eight kos at Mitanee; passing
Mitance. Bara-i-Kalan, and the following Momand villages; viz. Ba-
hadur, Mashookhel, and Ouzye, &c. over ground abounding in ravines
and jungle.

From Mitanee I proceeded seven kos to Akhor, and put up with Malik Akhor. Hakeem Akhorwal, by tribe an Afreedee, and a great robber. The road was stony and through defile. At the entrance of the defile are two ruined forts and a large tank. There is a large town here, erected by the Afreedees. One thousand rupees are yearly levied here on salt.

From Akhor I proceeded to Cohaut over a hilly road, and through a defile; the neighbourhood abounding with Afreedee villages, and put up with Agha Mehdee in the village of Myankhel, near the shrine of Hajee Bahadur. On the road passed the village of Zarghoonkhel, where there is a large tank and four towers, one at each angle of the village, and four kos further on, passed the village of Torakee, which is situated on an eminence; and then the Cohaut kotal or Pass, which is very difficult, especially of descent. On the top of the Pass is a tower, nominally for the protection of the road; but it is garrisoned by twelve men of the Afreedee tribe, who, although entertained and paid by the governor of Cohaut, are often themselves engaged in plundering merchants and travellers. At the bottom of the Pass is a second tower, garrisoned by twenty men. At Cohaut I discharged the former Meerza, having paid him up.

Cohaut is divided into three tappas, as follow: Bazeekhels, Samalzies, and Meeranzies.

Cohaut itself is included in the territory of the Bazeekhels. The fort of Cohaut, in which the governor resides, is of a square form having four bastions, and situated on an eminence. There is a second fort, in which there is a dwelling house and reception room, over which is the *mehman khanna*. There is a tower in the fort at the entrance and a covered well; drinking water is procured from seven springs outside the fort; three of the springs gush out from near the Telee's mosque, Bazar, and four from the vicinity of the Bazar, by which four mills are turned. There are fifty shops, four mosques, and two dharmshals.

Cohaut has to the east the Afreedee country, the Torakees and Soorakees, and Khushalgar, to the west Hangoos, to the north the Pass, and to the south Lachee and Dour.

The following are the neighbouring dependencies of Cohaut, entered into the daftars as Bangash-i-Paiyeen Jangal, under Neighbouring dependencies. Shah Zaman and Aslam. The cultivation is car-

ried on by running water. There are one hundred and fifty houses. The fighting men amount to one hundred and ten. They are friends with the Sepas, and enemies of the Khattaks.

Peerkhel, under Maliks Raz and Jafar. There are one hundred Peerkhel. houses, and eighty fighting men, who are friends of the Sepas, and enemies of the Khattaks.

Garee Myankhelan, under Malik Nasarulla, contains fifty houses. Garee Myankhelan. The cultivation is conducted with spring water. In this division, the shrine of Hajee Bahadur is situated, as well as a large mosque, and a well with a Persian wheel. The fighting men amount to one hundred.

Bezadee, under Maliks Arsala and Siffat, contains one hundred Bezadee. houses, and eighteen shops, and turns out sixty fighting men.

Meer Ahmedkhel, under Malik Mahmood, contains fifty houses, and turns out thirty fighting men.

Shekhan, under Malik Sheraz, Afreedee, Zarghoonkhel, situated at Shekhan. the base of a hill, contains eighty houses; and turns out fifty fighting men.

Kaghazee and Nasratkhel, under Malik Noor. A number of other Kaghazee and Nas- villages have been deserted on account of the ty-
ratkhel. ranny of Sher Alea, the former governor. The cultivation is carried on from the river. The above two khels contain fifty houses, and turn out eighty fighting men; and are the jaghire of Ismail Khan, son of Jahandad Khan Popalzeye.

Mahommedzye, the jaghire of Agha Mehdee is under Malik Bashar, Mahommedzye. and contains two hundred and fifty houses, and two water mills. The number of fighting men is 95.

I paid a visit to the famous koh or hill of Ahad-i-Saboor, so much Ahad-i-Saboor. talked of by the people of Cohaut. It is situated on the road to the Samalzyes, and beyond Mahommedzye and Nasratkhel. I had heard that there was an old inscription which no one could read, and went therefore prepared to copy it: also, that there were the ruins of an old square fort, with the remains of the stable, harem, and pillars of a throne. I went in company with a party Shah Kotah. from Cohaut to this hill, which is also known as Shah Kotal. The foot of the hill is covered with jungle. On the side of the hill is an opening or cave, and on the outside are two sta-

lactite looking pillars, the whole place evidently natural. The inscription alluded to, was nothing in my opinion but natural crevices and marks in the rock. On the hill are just perceptible, the remains of a very old fort. There is also a spring of water, and a large "peepul" tree. Adjoining this hill, is the hill of Damechoor, which extends to the Pass of Cohaut.

Bar is under Shahbaz Khan, and contains sixty houses and several vineyards. The cultivation is carried on by running water.

Kamar Dand is under Gul Sher Khan, and contains thirty houses. Kamar Dand The cultivation depends partly on rain, and partly on running water.

Soorgal and Jabba are under Buland and Musaib, Zarghoonkhel Soorgal. Afreedees. The cultivation is carried on by water from the Kuram river. The fighting men amount to 50.

Jarma and Shapoor are dependencies of Garee Myankhel, the former Jarma and Shapoor. is nearly a waste; and the surrounding jungle is very dense.

Togh is under Mulla Ahmed and Kamm, and contains four hundred houses. The cultivation is carried on by a large canal from the Kuram river. The fighting men amount to 160.

Teeree Tang is under Malik Nasro, and contains two hundred Teeree Tang. houses, and turns out 70 fighting men.

Khurmatoo is under Kuram Sher, and is cultivated from the Kuram Khurmatoo. river. The fighting men amount to 80.

Thattee and Maramzyes are under Malik Himmatt, and contain Thattee and Maramzyes. one hundred and twenty houses. There is a great portion of waste land.

Kot-i-kandiyalee is under Maliks Akram and Aizam. It contains Kot-i-kandiyalee. one hundred houses, and 50 fighting men.

Gandiyabee Killa, known as Zanjeer Kamar, is situated on an eminence, and is now in ruins. It is reported to have been built by the former Hindoo rajas. There are remains of bastions, a stable, and tank. Of the wonderful zanjeer, or chain, from which the place derived its name, there is of course no vestige

Siah is under Gul Mahommed. The cultivation is carried on from Siah. the Kuram river. The number of fighting men is 60.

Tareekhel was formerly a dependency of Cohaut, it is now independent. They are neighbours of the Afreedees. The fighting men amount to 200.

Gadakhel is under Shahzadah and Khanawadah. The cultivation depends partly on the rain, partly on canals. There are four hundred and fifty houses. The fighting men amount to 200.

Dhoodah is under Mahboob. The cultivation depends on the rains.

Dhoodah. There are four hundred houses, and 80 fighting men.

Shadeekhel, Kamal, Mandakhel, Kotree and Muchkee are under Shadeekhel, &c. &c. Malick Samad, &c. There are four hundred houses, and the revenue amounts to 6,000 rupees.

The tappa of Bazee is under Naib Gul Maz Khan, whose family formerly enjoyed the whole of Cohaut. He is by tribe a Shakookhel. The revenue, including the customs, trades, and weavers and tax on herds amounts to 41,000 rupees, and the fighting men of the whole tappa amount to 1200. The people of Bazee are all Musselmans of the Sunnee creed.

The tappa of Samalzye is inhabited by Sheah Musselmans, and is farmed by Sher Alee Khan, Izzatkhel, father-in-law of Sirdar Sultan Mahommed Khan. The dependencies of Samalzye are as follow:—

Mouza Alezye, under Ghulam Khan, is situated in a valley, having Alezye. to the north, across the hills, the tribe of Sepa, outside the fort are two hundred houses. The shrine of Myan Fatteh Shah is situated in the suburb of Koh. The fighting men amount to 80.

Ustarzye-i-Paieen contains a mud fort. It has two gates, one to Ustarzye. the east, the other to the west, and two hundred houses. The fighting men amount to 100 Ustarzye-i-Bala under Meerza, and contains a mud fort with two gates both to the north. There are one hundred and fifty houses, and the same number of fighting men

Kachee Bala-o-Paieen, under Muazim Sher, is divided into four Kachee. mouzas, each containing a mud fort, and two large towers, and from four hundred to five hundred houses, as well as vineyards and pomegranate gardens. The fighting men amount to 200.

Marye Bala-o-Paieen, under Jafar Alee, is situated on an eminence, Marye. having two hundred houses below, and 150 fighting men. This place borders on the Teera Pass, at the bottom of which are seven water-mills. The revenue of the whole tappa amounts to 22,00,

rupees nominally, the whole sum being seldom realized. The people of Samalzye are noted for bravery; the cultivation depends chiefly on the Kuram river.

The tappa of Meeranzye is a dependency of Hangoo, as far as Tal-Meeranzye. i-Bulandkhel. From Cohaut I proceeded to Ustarzye and thence to Marye, where I took up my quarters in a mosque, where a man presented himself, saying, he had two wives, a grown-up son, and a daughter-in-law; that he had committed some gold and rupees Theft. to the keeping of his senior wife, which had been lost, and requested me, as I was a fakeer, to ascertain who had taken it. I accompanied him home, where I found all the members of the family disputing and interchanging high words. I enquired of the master of the house which wife was youngest. He replied—the one I have just married, and the management of the house is entirely in the hands of the boy's mother. I asked him which he liked best. He replied one has got old, and the other is pretty and young, what more need I say.

I requested that they should all assemble. On their presenting Conjuring. themselves, I wrote all their names on separate slips of paper, and folded them up separately, filling all with ashes; but one, which I filled with detonating powder. I then gave a stone into the hands of the Malik, and ordered him to strike each paper, as I gave the signal during my incantations. On the explosion from one of the papers ensuing, I pretended to read the name of the thief, allowing the party the night to consider, before being exposed. Towards night-fall, having occasion to go out, I was followed by the senior wife, who taking hold of my skirt, confessed she was the thief; having Discovery. been driven to the act, in the hope of attaching suspicion to her rival, and thus, estranging her husband's affections from her. She promised to return the articles, provided I would not expose her, and would do something with her husband, so as to induce him to visit Stipulation. her once a week. I promised this, and the articles were brought to me at midnight in the mosque. In the morning I sent for the husband, and presenting him with the missing property, enjoined him to treat his first wife with greater consideration. He after some disputation, agreed to visit her once a month.

My digression from Cohaut to Peshawur, my return to that place, and my journey to Teera, occupied eighteen days.

1st Mohurrum.—Proceeded seven kos to Sultanzye in the district of Teera, passing the Barah river and the Koh-i-Boland pass, which is difficult even for footmen. The sides of the hill are covered with jungle, and the cultivation is carried on with the water of the Barah river. There are three forts here, two belong to Band Alee Khan, Sultanzye Orakzye. The inhabitants are partly Sunnee, and partly Sheah Musselmans. The other chief is Alam Khan, Orakzye. The forts have all four bastions fitted to bear artillery. The fort in which Alam Khan resides is separate, and has a *mehman khanna* above the gateway, a small gun, without shot or ammunition of any description, is also near the entrance. There are twenty-two Shaheens mounted on the bastions. The fighting men amount to Alam Khan. six hundred who are independent. Alam Khan being in the employ of Sirdar Dost Mahommed Khan, generally spends his time in Basoul, Jelalabad, and Cabool. He has eighty horses of his own, and receives 24,000 rupees pay. He has a jaghire in Basoul. In the times of the former Sadozye kings, the Orakzyes received from 22,000 to 25,000 rupees a-year. They are friends with the people of Jamrood, Barakee, and Alam Guzeer, and enemies of the Abdul Azeekhels and Maneekhels. To the east is the Bangash road, to the west Usmankhels and Istareekhels, to the north hills and the road to Peshawur, and to the south hills, and beyond them, the Hurbuz and Mancekhel.

2nd Mohurrum.—Proceeded seven kos to Abdul Azeekhel. The Abdul Azeekhel. cultivation chiefly depends on the rain. There are five hundred houses. The headman who is also a holy man, is Maddat Shah. Meer Maddat Shah, he is a *peer*, or spiritual chief of the Sheahs of this neighbourhood.

The inhabitants have separate forts, and muster 450 fighting men, a lawless set. They are friends of the Maneekhels, and enemies of Mastee and Shekhan.

This year, which was one of scarcity, wheat sold at four and half *akahs* the rupee, and juwar at five or six *akahs* [one *akahs*, seven Peshawur seers.]

The inhabitants carry their hatred of the rival sects of Sunnees Sheeahs. to an inveterate extent, and during the ten first days of the Mohurrum, their penances are very severe. They fast the

days, and hold their meetings in the house of Maddat Shah, who has the most unbounded influence over his disciples, the Maneekhels and Abdul Azeezkhels.

In these districts, apples, grapes, mulberries, walnuts, pears, pomegranates ; in short all the Cabool fruits are produced in plenty.

In the hot weather, the situation is peculiarly pleasant. To the east is Garee Rustam Khan, to the west Mastee and Shekhan, Mullakhel and Baramadkhel, to the north hills, and beyond them, the Afreedees and the road to Jelalabad, and to the south the Maneekhels. They have never paid revenue since the time of the Chaghatye kings.

During my stay with Maddat Shah, I saw none of the assumptions

Maddat Shah. that the Sunnees give him credit for ; but his disciples, certainly, are in some instances, beyond bounds in the homage they pay him. In their prayers, for instance, they ask forgiveness in his name and those of his children and forefathers.

During my stay, my Persian Meerza who was a Sayad, made a mistake, which was nearly proving of serious consequence. He one day seated himself on the vacant cot of one of Maddat Shah's sons. I overheard the bye-standers muttering a threat, that if he were not a guest, they would kill him for the insult. I explained, in extenuation, that my companion was a Sayad, as well as my host. "He may be," was the reply, "but for all that, he shan't presume to sit on that cot."

The Bangashees perform the pilgrimage to Meshed. I have often met them in Persia, and whenever the name of Maddat Shah is mentioned, if they are seated, they immediately rise, and press the forefinger of their right hand, half closed, first to their lips and then to their foreheads.

Maneekhel is pleasantly situated in a valley. In the summer, this place enjoys the best climate in all Teera. The cultivation is carried on by spring and river water. The winter here is very severe ; but the poor people find plenty of firewood near at hand. There are one or two mills on every canal. There are six hundred houses of stone and mud ; and the fighting men amount to 800. They are enemies of the Sunnees of Mastee and Shekhan. The Sheahs of the neighbourhood are said to be descended from a converted Hindoo, named Shamal, and the Sunnees of

one, named Karah. To the east are hills, to the west hills, and beyond them Bangash, to the north the Abdul Azeekhels, and to the south hills, and beyond them Bangash.

Baramadkhel is situated on an eminence, in a valley beyond Baranadkhel. Maneekhel. The inhabitants are Sheeahs. The cultivation depends on springs and water from the Teera river. There are one thousand houses of stone and mud, and 600 fighting men. They are friends with the other Sheeahs, and of course enemies of the rival Sunnee tribes. The chief men are Ghulam Khan and Meer Ahmed Khan, Orakzyes. To the east is Karnar, to the west Maneekhel, to the north hills, and to the south Samal.

Usmankhel and Ferozkhel are inhabited entirely by Sunnees. The cultivation depends on the Teera river. Every village has its separate mud fort. There are five hundred and forty seven houses. Usmankhel is to the north-east, and Ferozkhel to the north. There are no regular appointed Maliks. The man who entertains best is chief for the time. The fighting men amount to 4 or 500.

In every village of Teera there is a Hindoo's shop, and the Hindoos of both sexes in this district wear the same clothes as the Musselmans; and therefore cannot be distinguished by a stranger at a glance. The fruits here are very fine in the summer. The inhabitants dress in

Dress. loose trousers, confined at the bottom; and in long shirts, sewn double and treble, reaching to the knee, and sometimes to the ankle. Dark-blue lungees compose their head dress. The women wear rows of silver coins as buttons on their vests.

Beyond Ferozkhel is Kilah-i-Gehrajgal in the Afreedee country, situated in a valley, of which the land is of a peculiar red colour, and through which the Barah river runs as well as the road to Basoul and Cabool. I was directed by Major Leech to visit a place called Rajgurh. I never heard of any place nearer approaching the name than this. To the east of Ferozkhel are the Zakhakhel Afreedeas, to the west the Masteekhels, Shekhans and Mulllakhels, to the north the road to Cabool, and to the south the Abdul Azeekhel. The inhabitants are independent. On arriving near Usmankhel, I met a young woman proceeding to draw water; she enquired who I was, and received for answer from one of my men, that I was a fakeer of a saintly character. She invited

Incident.

me to her house, where she presented me with a chillum, some raisins, and jalghozas, paying me attentions that did not seem to excite the jealousy of her husband; and at nightfall, brought a cot for me to sleep on. The unblushing overtures made by this woman in the course of the evening, and many other incidents on my journey, led me to

form a very poor opinion of the simplicity of the
State of Morals. country people of Affghanistan. They seem far to

surpass the towns-people in the looseness of their morals.

Ustarzye borders on the Khyber and Basoul. The inhabitants have

all separate forts, amounting to twenty. There were for-
Ustarzye. merly three thousand houses. At present there are even

more, some at the fort, and some at the top of the table land. The cultivation depends partly on the rain, and partly on spring water. There is no fixed Malik. He who entertains most is the best man, and possesses greatest influence. The fighting men amount to upwards of 3,000. They are very independent, and great robbers. They are of the tribe of •Orakzye. They are friends of the Afreedees, and enemies of the Abdul Azeekhels and Maneekhels. They are, as might be expected, Sunnee Musselmans. To the east are the hills and the road to Peshawur, to the north are the hills, and to the south are the Abdul Azeekhels.

Before my arrival at Ustarzye, my fame as a fakeer had preceded me. Immediately after my arrival a man waited on me, and represented that he had a very beautiful daughter, who regularly every Sunday and Wednesday went mad, and sometimes struck herself, and

sometimes her relations; that she was engaged to be
Another devil married, and her intended had become averse to the
cast out. match ever since the commencement of these fits; intreating me to cure

her. I became at a loss what to do, and what puzzled me more, was, that the day of my arrival was a Saturday and the next day the girl, as was her wont, had the mad fits; and I was taken to the house and found her stretched at full length, heaping abuse on all her relations. I soon discovered that she was shamming, and commenced operations accordingly. I drew a line on the ground around her, and wrapped some brimstone in a rag and gave it to my servant, while I covered my own head and commenced incantations; telling the servant to light the rag, and apply it to her nostrils; while I ordered the father to hold her firmly until I told him to release her, warning him, that if he did

so without my telling him, the devil, of whom his daughter was possessed, would kill her. On the burning brimstone being applied, she begged to be released in a sensible tone of voice. This I would not allow, until she spoke in the person of the possessing devil, and promised he never would return. I explained that it was necessary to give a written charm to prevent the return of the devil, and explained to the mother, that I wished to see the girl in private. On her being brought, I questioned her before the mother about the devil; she replied, that as long as the fakeer (myself) remained, he (the devil) would not possess her; but immediately on his (my) departure, he (the devil) would destroy her. After this, the mother motioned her daughter to depart, who refused, saying she would stay and wait on me. When we were

alone, the girl told me the truth; which was, that she had
 Disclosure a lover, and played these tricks that the match with the young man to whom she was engaged, might be broken off. I promised to aid her, and told her to get her betrothed to visit me. In the morning the young man came and asked me to do all I could to cure his intended of her fits. I explained that if she got cured, the devil would attack him instead; and proved it by my old apparatus of the bowl of dirty water and the steel spring, which ejected his name as the fated one. He was much frightened, and entreated me to point out a remedy. This I did by assuring him, he could never marry the "possessed," and live; and that therefore, he had much better take the other sister, who was also marriageable. This, after sometime was, with my assistance, arranged. The successful lover, who had hitherto remained in the back ground, now visited me, bringing with him some cooked dishes. He afterwards accompanied me one stage as a guide, and I left Ustarzye with the satisfaction of having caused the happiness of two beings at no one's expense.

The cultivation of the Masteekhels depends on spring water. Their
 Masteekhels. habitations are partly below, and partly on a rising ground. They have all separate forts, amounting to about twenty. The headman is Jemadar Misree. They amount to three thousand fighting men, and are friends of the Shekhans and Mullakhels, and enemies of Abdul Azeekhels: and they are always armed night
 Hospitality. and day accordingly. This tribe and that of Shekhan are noted throughout Teera for their hospitality. To

whole ten the east are the Abdul Azeekhels and Maneekhels, to the west the Aleekhels, Sherzyes and Mamoozyes, and to the south the hills.

Shekhan extends to Naryab. There is no headman. The fighting Shekhan. men amount to three thousand. To the east are Abdul Azeekhels, and to the west the Mullakhels and Alee Sherzyes. The Ismailzyes. cultivation of the Ismailzyes depends on the Samal canal, which runs towards Cohaut. It is divided properly into Akhel Rabiakhel and Ismailzyes. The headman is Sirdar Sayad Shah. They are friends of the Aleekhels. The fighting men amount to 1,000. To the east are the Alee Sherzyes, to the west Shekhan, to the north the Afreedees, and to the south the Tortareens.

The Alee Sherzyes have six mouzas, and seven forts. The cultivation chiefly depends on the rain. The headman is Mazulla Khan. The fighting men amount to 3,000. To the east are the Mamoozyes, to the west the Shekhans and Masteekhels, to the south Bangash, and to the north the Afreedees.

The cultivation of the Mullakhels depends chiefly on the rain. There are six mouzas dependent. The habitations are in Mullakhels. a valley. The chief man is Mulla Ahmed Orakzye. The fighting men amount to 700. To the east are the Aleekhels, to the west Abdul Azeekhels, to the north the Shekhans, and to the south Bangash.

The cultivation of the Mamoozyes depends on the Barah river. Mamoozyes. There are thirty or forty forts under Mazulla Orakzye. The fighting men amount to 400. To the east is Chamkanee, to the west Masteekhels and Shekhans, and to the north the Afreedees.

The Chamkanee Orakzyes inhabit the base of the Seefed-koh range. Their cultivation depends on the rain. The Chamkanee. fighting men amount to 3,500. The headmen are Noor Alee and Arsalla. They have internal feuds. To the east is Teera, to the west are Kuram and Bangash and the Shrine of Lot, to the north Suefd-koh, and to the south the hills. I remained in Teera eleven days.

The district of Kuzeer is in a valley beyond the Maneekhel Pass, the descent into which is very difficult. There is a covered Kuzeer. tank of rain water near the top. The Pass is covered with

trees. The inhabitants are called Bar Mahommedkhels. There are two forts on the plain, and three on the hill. The cultivation depends partly on springs, and partly on the rain. The people live in caves.

Caves. The headman is Meer Ahmed Khan. The number of fighting men amount to 400. To the east is Bangash, to the west

the Maneekhel Pass, to the north the hills, and to the south hills, and beyond them the Bengash country. The inhabitants are partly Sunnees and partly Sheahs. The latter are disciples of Meer Ahmed

Spiritual Chief. Shah, who resides among the Abdulla Azeekhels, and Myan Noor Shah, who resides at Maree, a dependency of Cohaut.

On arriving at Kuzeer I put up in the mosque, when an old man presented himself, and entreated me to pay a visit to his son, who was ill at home with dysentery. I assented, and found the young man much reduced, and a young interesting wife mourning over him. I administered some warm tea, with a little ginger to him, which seemed for a time, much to the delight of his friends, to revive him. His father accompanied me a stage as a guide.

Buroonee is situated at the foot of a hill; the inhabitants are partly Afreedees, partly Orakzyes. The Afreedees border on the Khyber. The cultivation depends on the rains. There is no headman. They are friends of the Ferozkhels. To the east are the Kukeekhels and Rabiakhel Afreedees, to the west the Afreedees, to the south the Ustareekhels, and Caree-i-Alam Khan Orakzyes. They are independent.

13th Mohurrum.—Proceeded to Hangoo, known as the tappa of *Hungoo.* Meeranzye. The cultivation depends partly on wells, partly on running water. There are one hundred and forty houses, fifteen Hindoo shops, seven dyers and blacksmiths, and twenty-eight lungée weavers. Azeezulla Khan is hereditary chief of the Meeranzye tappa, and the authority of his ancestors extended to Naryab Tal and Bulandkhel; but he is now a fugitive from the tyranny of Sultan Mahommed Khan.

At present the chief men are Sadulla and Samad Bangashees. Hangoo is farmed by Naib Darbarza Bangashee, a resident of Togh, for 30,000 rupees. Out of this he draws his own pay, which amounts to 5,000 rupees. He has 60 horse and 730 foot; and he sometimes

has as many as 110 horse for the revenue collection. Hangoo is divided

into the following mouzas: Raisan Ibrahimzye, Poodokhel,
 Division. Bazar, Malkhoora, Ragho, Garee Saiyadha, Togh, Bandah-

i-Shekhan, Bhookhel, Baukhounnee, Bagdoo &c. &c. The inhabitants of Hangoo are nearly all Sheeahs. There are six springs in the tappa of Meerazy; three to the north, at the foot of a hill near the shrine of Meer Shah Tootee and Meer Shah Umar, and three to the south. In former times, the number of fighting men amounted to 3,000. At present they do not muster 1,000. They are friends of the Khattaks, and enemies of the men of Naryab, Dar Samand, Tal, and Bulandkhel. To the east is the road to Cohaut, to the west the road to Maryab, to the north hills, and beyond them Teera, and to the south the Khattaks.

The Khattaks, Bangashees, and men of Teera, all wear grass sandals,

Dress. and the women go bare-footed. Hajrab yahood (lapis judaicus) and 'shadaniy adasee (blood stone) are found here, near the shrine of Meer Shah Tootee. At this place I broke off another match, at the earnest entreaty of one of the parties, a pretty young girl, who declared she would destroy herself if I did not re-

A nother marriage broken off. lease her from it, and thus her blood would be on my head. In the excess of her gratitude, she tore her silver necklace off, and pressed it on my acceptance; I however would receive nothing but a few roasted fowls.

15th Mohurrum.—Proceeded seven kos to Kahee, which was formerly dependent on Hangoo, passing two tanks on the Kahee. road, and a jungle of "*mazr*" and wild flowers of a yellow colour. The cultivation depends entirely on the rain, and they drink nothing but rain water. There are six hundred houses, and 500 fighting men, under Azeezulla Khan. They are friends of the men of Naryab, &c. and at enmity with the Khattaks. To the east is the road to Hangoo, to the west Naryab, to the north Teera, and to the south the Khattaks. The revenue formerly amounted to 240 rupces.

Sometime after my arrival at the mosque a man presented himself, took hold of the skirts of my garment, and explained, that he was a "*shikaree*," (slang for a thief,) and that he had been unsuccessful for sometime past in getting "*shikar*" (game,) and now wanted my prayers for his better luck. I complied

Pray for a Thief.

with his request, covered my head, and muttered something. He immediately started to put my prayers to the test that very night. He was unsuccessful, and it came to my ears that he had declared I was a cheat, and would strip me on my next stage.

I started the next morning, and after proceeding some distance, saw
 Rencontre. that my friend of the last evening had kept his promise,
 and confronted me with three fellow-thieves. I lost no
 time, on his coming in sight, in placing some detonating powder on a
 stone; on his commencing to abuse me as a cheat, I rested my walking
 stick, in rising, on the powder, saying at the same time, "Whatever is
 done, is done by the will of God." The usual explosion ensued, and
 the thief, in repentance, threw himself at my feet.

16th Mohurrum.—Proceeded five kos to Naryab, (known as Badah
 Maryab. khel), the cultivation of which depends on a running
 stream that comes from the direction of Teera. There are
 seven hundred houses, and sixty shops. There is here an extensive
 Mules. sale of horses and mulcs. The Wuzeeree unbeaten iron
 is sold for twenty-eight seers the rupee. It is beaten here
 and sold at twelve and fourteen seers. There is a mud fort, having
 two gates. A canal runs through the bazar. Near the gates is the
 Shrine. shrine of a descendant of Myan Tahir Shah. The headmen
 are Auer Khan and Nijabat, Badahkhel Bangashees. The
 fighting men amount to 500. They are friends of the Habiakhehs, and
 enemies of the men of Zeemukht. To the east is Kahee, to the west
 Dar Samand, to the north Teera, and to the south the Khattaks. The
 revenue, if enforced, amounts to from 900 to 2,000 rupees.

17th Mohurrum.—Proceeded five kos by night to Dar Samand,
 Dar Samand. having procured the company of two Hindoos, who were
 furnished with two guards, (Badrakas.) The Persian
 writer, who used always to lag behind; on this stage, as there was
 Anecdote of Meerza. danger, to my astonishment I observed running a-
 head, with his shoes in his hands; and only overtook
 him at the next stage. On inquiring the reason of his unusual activity,
 his reply was: "Fear is the brother of Death." There are two or
 three mud forts in Dar Samand. There are two springs, one called
 Neelee to the north, and the other Gulab to the south, which springs
 from the Gulab hills. It is also called Regee. There are seven hundred

houses. The headmen are Bakar and Turabaz. The number of fighting men amount to 700. They are friends of the Zeemukhts or Torttareens, and enemies of the Khattaks. To the east is Naryab, to the west Tal, to the north the hills, and to the south the Khattaks.

At this place, the Persian Meerza was nearly getting into a scrape,

Indiscretion of
Meerza. from which I was only just in time to extricate him ;
 having first recourse to admonishing him harshly.

He had accepted the invitation of a mistress of one of the houses in the village to supper, after having written out for her a charm she requested, and I found him making himself quite at home in her house, and the intimacy gradually growing to an indiscreet extent.

19th Mohurrum.—Proceeded six kos to Tal, known also as Badah-

Tal. khel, which contains a square mud fort, having one of
 the bastions full to bear artillery. The cultivation partly

depends on the Kuram river, which takes its rise in the Sufedkoh

Kuram river. mountains, and passes through Kuram, Tal, Cohaut,
 Bannoo, and Murwat ; and partly on a spring to

the north, called Sangroyah. There are seven hundred houses of Mus-
selmans, thirty five Hindoos, and twelve shops. There is a great
horse and mule market here. There is a very large cave in the
Zeemukht hill, which has never been explored, which has a draught
of air always issuing from it, which makes a noise like the turning
of mill-stones. Near this, there is also an impression on the rock
of the palm of a hand, of which there are so many known in Khoras-
san as “Panjah-i-Shah,” and looked upon as the impression of the

Panjah-i-Shah. hand of Hazrat Aly. There are flint rocks near,

on which are two shrines, one of Peer Shah, the
other of Peer Umar Shah ; also an antimony mine of inferior quality,

Antimony. which however is exported to Multan. There are two Hindoo
 merchants at Tal. Better flint is to be procured, of a

black colour, at a kos further off ; which however, is difficult of access
on account of the Wuzeeree robbers. The headmen of Tal are Bha-
hawadeen and Duranee, Badahkhel Bangashees. The fighting men
amount to 600. They are friends of the men of Naryab, Kahee, and
Kuram, and enemies of the Khattaks and Zeemukhts. To the east
is the road to Dar Samand, to the west the road to Kuram, to the north
the hills, and to the south the Kuram river. The inhabitants are

almost independent. They formerly paid to Sultan Mahommed Khan 240 rupees a-year. When a force is sent (which seldom is) 2,000 rupees is collected at once.

20th Mohurrum.—Proceeded six kos, passing the Kuram river to Bulandkhel, which contains a mud fort, with two bastions and two gates. The inhabitants are Badakhkel Bangashees. The cultivation depends on the Kuram river. The houses amount to three hundred and twenty-five; and the Hindoo shops to sixty. There are seven dealers in mules, horses, and sheep. The amount of fighting men is 300. They are friends of the Wuzerees and enemies of the Khattaks, and people of Tal and Khost. To the east is the road to Khost and Murwat, to the west the road to the Wazerees and Kuram, and to the north the hills. They do not pay revenue unless it is enforced by troops. In the neighbouring hills, are villages of the Wazerees.

22nd Mohurrum.—Proceeded nine kos to Zeemukht, which is the name of a tribe of Tortareens, that emigrated from Herat, and colonized here. The fighting men formerly amounted to 3,000; they have increased. The cultivation depends partly on the rain, and partly on springs. There are 20 or 30 forts in the valley, belonging to the Zeemukhts, who extend to the border of Teera. They are friends of the Toorees, and enemies of the men of Mules. Tal and Bulandkhel. Mules are plentifully produced in this country. To the east is the road to Naryab, to the west the road to Kuram, to the north Teera, and to the south the town of Bulyameen. The road abounds with jungle. At four kos I passed a stream of water.

23rd Mohurrum.—Proceeded to Bulyameen, which is the boundary of Bangash-i-Bala and Bangash-i-Paieen. The latter extending from Cohaut to Tal. The villages of Makhzye and Bagzye are included in Bulyameen. There are in all nineteen forts. The cultivation depends on a stream from the Sufed-koh. There are one thousand and nine hundred houses, and a bazar containing twenty weavers of dark lungees and karbas. There are many mule dealers. The headman is a fakeer, who in the times of the kings, enjoyed a salary of 12,000 rupees a-year. The fighting men amount to 1,500. They are friends of the Toorees, and enemies of the men of Khost. To the east is Bulandkhel, to the west the road to Cabool, to the north Kuram,

and to the south Khost and the Wuzeerees. The revenue is never collected but by detachments of troops.

Detail of the villages of Kuram, known as Bangash-i-Bala.

Sadah contains one hundred houses, under Adeen, Abdulla, Aly Sher, Sadah, and Nazar. The inhabitants are partly Sunnees and partly Sheeahs. The fighting men amount to 100. They are friends of the Toorees.

Balkh Shal contains a mud fort, and eighty houses, under Mahomed and Kuram Sher. The fighting men amount to 80.

Ibrahimzye, the jaghire of Sayad Ahmed, the son of Maddat Shah, Ibrahimzye, contains one hundred and twenty houses. The headman is Meer Hasan. The fighting men amount to 300. The jaghire was presented by Sirdar Dost Mahommed Khan, and consists of one-fifth of the produce.

Shaknee contains a fort on an eminence, and thirty houses under Dabood. The fighting men amount to 20.

Bat contains two mud forts and forty houses, under Chet, who can muster 35 fighting men.

Khela contains eighty houses, under Kasim, who can muster 55 men.

Alladad contains eighty houses, under Alladad and Allaiyar, who musters 55 followers.

Yakoobee contains a mud fort and sixty houses, under Noor Aly, who musters 44 followers.

Moorai-Sayadha contains thirty houses, under Shah Abdul Hassan, who musters 25 followers.

Ameelkot contains eighty houses, under Meer Alea Khan, who musters 70 followers.

Kuter contains seventy houses, under Ghazee, a Tooree, who musters 65 followers.

Sultan contains two forts and three hundred and fifty houses, under Khusro and Ghulam, cousins, who are at enmity. The fighting men amount to 300.

Agrá contains two forts and eighty houses, under Meer Kasam, who musters 35 followers.

Shiblan contains one fort and one hundred houses on the banks of the Kuram river, under Karam Sher, who musters 84 followers.

Alam Sher contains two mud forts, and two hundred houses, under

Alam Sher. Jahangeer Khan, who is chief of all the Toorees, and

Bangash-i-Bala. The number of fighting men amounts, to 150. To the west is Shilozan, to the east the road to Zeemukht, to the north hills and the valley of Kirman, which contains the shrine of Fakhr-i-Alam, the father of Maddat Shah, the spiritual chief of the Bangashees and Toorees, beyond which is the Sufed-koh range, and to the south Kuram.

Ahmedzye contains ninety-four houses, under Zamasp and Meerza Gul, who musters 80 followers.

Bilandeekhel contains one fort and two hundred and twenty houses, under Fattah Khan, who musters 200 followers.

Aza Khel contains forty-five houses, under Neyamat Khan, who musters 35 followers.

Tahda contains one hundred and twenty houses, under Jahan Khan, who musters 100 followers.

Kamshal contains two forts and two hundred and fifty houses, under Shah Hasan, Gul Hasan, and Meer Hasan, who musters 260 followers.

Pishra contains forty houses, under Gul Mahommed, who musters 35 followers.

Meerza Khan contains one fort and one hundred houses, under Meer Mahommed, who musters 80 followers.

Fattah Khan contains one hundred houses, under Alam Khan and Nasar Khan, who muster 90 followers.

Kot contain five forts and two hundred houses, under Fattah Khan, who musters 180 followers.

Sheraka contains two forts, under Buzurg, who musters 100 followers.

Toolak contains one fort and fifty-five houses on an eminence over the river, under Khoja Baz, who musters 60 followers.

Kharlachee contains one fort and one hundred and five houses, under Shaheen, who musters 120 followers.

Lalmee contains one hundred and forty houses round a fort, under Guldad, who musters 150 followers.

Aleezye contains three hundred houses, under Habeebulla Bangashee, who musters 280 followers.

Kirman is situated partly in, and partly out of a valley, and consists of twelve or more forts, under Futulla and Meer, who muster from 900 to 1000 followers.

Zeeran contains seven or eight forts, each fort having thirty or forty houses around it, under Mahommed Meerza and Hyder Alea, who musters 607 followers.

Koh Badshahkhel contains two small forts. The number of fighting men amounts to 140.

Ghundee contains one fort, and three or four other small ones are dependent on it, and two hundred and fifty houses, under Ganjan Khan, who musters 200 followers.

Ahmedkhel contains one fort, and turns out 120 fighting men.

Shilozan is a beautiful district, containing twelve small forts and ten streams, that all have their rise in the Sufed-koh, and fertilize the whole of Kuram. Silk is produced here of a very fine quality, and all the inhabitants engage in the produce. The headman is Meerza Hasan, whose sister is the wife of Dost Mahommed Khan, and mother of Mahommed Afzal Khan. The fighting men amount to 800, who are all Bangashees.

Paiwar contains six or seven forts, each fort having one hundred houses, under Noorak and Moosa, who muster 140 followers. The men of this place act as guides and guards to the Bangashee and Tooree pilgrims, who, as Sheeahs, could never otherwise pass the country of their inveterate enemies, the Jajees, who are Sunnees. These men take them by unfrequented hill roads to Logur, and receive from each pilgrim in return, 2 or 3 rupees.

Notice of Bangash-i-Bala, known as Kuram.

From the entrance of the Chamkanee valley to Bulyameen, is geographically included in Bangash-i-Bala, and the Toorees have the territory.

The whole of Bangash-i-Bala is divided into twenty-nine miskalees, according to Meerza Hasan, partly as follow :—

The Darra-i-Chamkanee is situated in the Sufed-koh range. The fighting men amount to upwards of 3,000. The headmen are Baoo Khan and Arsalla. It is reckoned,

	...	...	3	Miskalees.
Deda,	...	...	1½	ditto.
Kirman,	...	...	2	ditto.
Bulyameen, Maghzye, and Bagzye,	...	...	4	ditto.
Jajeas, known as Zarakhel,	...	...	1½	ditto.
Ghundeekhel,	...	...	1½	ditto.
Aleezye,	...	...	1½	ditto.
Ibrahimzye,	...	...	½	ditto.
Ahmedzye,	...	...	½	ditto.
Balkh, Kamshal, and Nahda,	...	...	1	ditto.

The other details I did not succeed in procuring. The district is under Sirdar Dost Mahommed Khan. Its revenue amounts to about 52,000 rupees, of this the Dastar tax amount to 12,000 rupees. In former times, the Toorees, who have seized on Bangash, alone used to furnish 3000 foot and 500 horse, independent of Bangash-i-Bala; at present, including the latter, they might collect 5,000 foot and 800 horse. They are enemies of the Jajeas. They have much property, and most of them trade.

Contingent.

The coarse rice of Kuram is famous, and the inhabitants chiefly live on it.

The inhabitants all dress in dark blue, and the only ornaments worn by the women are rows of small coins called Abbasee Kareem Khanees, sewn on their vests in rows. The trousers of the men are made tight below the knee. Their arms consist of selawas and long matchlocks.

The price of wheat, in plentiful seasons, varies from fifteen to twenty *thattees* (one *thattee* three Peshawur seers) the rupee, and in seasons of scarcity seven or eight *thattees*. The Hindoos of Tooree are only to be distinguished by their language, from the Mahomme-dans. The people of Bangash-i-Bala burn wood instead of oil.

On arriving at Paiwar, I put up as usual in the mosque, where a man presented himself, and requested me, as a fakeer, to tell him, whether the object he had in view would be accomplished or not. I drew some unmeaning lines on the ground,

Prediction.

and told him to count them by fours, telling him that if one remained, his project would succeed; if two, it was doubtful; and if three, it would fail. He counted, and much to his delight, one remained. Promising if my prediction came true, he would make me a present of a mule, he took his leave. Some hours afterwards, I heard that his project had actually succeeded; which I learnt, to my astonishment,

was no less a one than eloping with another man's wife.
 Fulfilment. I never however saw him or the mule again.

The people of Paiwar are enemies of the Jajees, and friends of the people of Shilozan. To the west are the Jajees, to the east Shilozan, to the north Sufed-koh, and to the south Chamkanee. On starting from Paiwar for the Jajee country, as the Mangal robbers infested the road, and as there were Kuram and Sheeah merchants in the caffila, guards were procured to pass us over the Paiwar Pass to Kamshal. On approaching the Pass, twenty Mangal robbers joined the caffila;

and Meerza Safdar Shah entered into conversation with
 Robbers. them, and gave one a lungee, in which he had tied up some walnuts and raisins, to carry for him. On crossing the Pass, these gentlemen walked off, taking the Meerza's property with them, who forthwith vowed never again to make acquaintance on the high road.

29th Mohurrum.—Proceeded from Paiwar seven kos to Maskanee, which is in the Mangal territory; passing the Paiwar
 Maskanee. Pass, which abounds with *archah* trees.

30th Mohurrum.—Proceeded seven kos from Maskanee to Sufed-koh, where I was stopt by wind and snow, at a fort in a valley, called Paryan, whence three valleys separate; one leading to Jajee, the second to Mangal, and the third to Logur. A short time after putting up in the mosque, a good looking young lad made his appearance, and gave me the usual salutation which I acknowledged, then approaching he took my hand, and with a sigh, said he wished to renounce the world and turn fakeer too. On enquiry, I found he had no relations but a widowed mother. I in vain tried to dissuade him, by pointing out the hardships and dangers of a fakeer's life. He insisted on remaining with me, and occupying himself in attending to my wants. When my companions had all fallen asleep, to my horror I found the young scoundrel was a hypocrite, and something much worse, from the

disgusting nature of the overtures he took that opportunity of making. The Mangals amount to 3,000, who are all independent.

Notice of the Jajee country where I arrived on the 1st Safar.

The Ahmedkhels are located in a valley, and have five forts, two Ahmedkhels. hundred houses, and 400 fighting men.

The Tarlakees are also located in a valley, and have three forts belonging, one to Malik Gul Khan, and the other two to his tribe. The forts contain eighty houses, and the number of fighting men amounts to 120.

The Meerankhels have six forts containing thirty houses each, one belonging to Alee Gul, another to Meerjane, two Meerankhels. to Sahib Khan, and two to Malik Madak. The number of fighting men amounts to 300.

Alishing is situated also in a valley, and contains twenty houses, and 40 fighting men.

Batela consists of two forts, containing forty houses, and 100 fighting men.

The Loonees have eight forts, containing two hundred houses, and Loonees. 400 fighting men.

The Ameenkhels have two forts situated on the high road, containing sixty houses, and 130 fighting men.

Ahmadvhel consists of one fort, forty houses, and 100 fighting men.

The valley of Dreplara contains two forts, one hundred and twenty houses, and 400 fighting men.

The Aleekhels have five forts, one belonging to Khanee, one to Aleekhels. Abdulla, two to Khanzadah, and one to their tribe. There are altogether two hundred houses, and the number of fighting men amounts to 600.

The Mangals and Jadrans are also situated in a valley, having to the east Khost and to the west Gurdez. They have in Mangals and Jadrans. all 250 forts and 500 black tents. They are perfectly independent, and pay revenue to no one. A great quantity of the hilly lands are laid out in terraces and cultivated.

The Hasankhels have three large and four small forts, containing three hundred houses. The number of fighting men is Hasankhels. 1,000. There are many gardens here.

Kochee consists of three forts, containing one hundred and fifty houses, and numerous gardens, and 400 fighting men.

The fort of Shah Mahommed contains fifty houses, and 200 fighting men.

The fort of Sarwaneekhel contains fifty houses, and 100 fighting men. The apricot gardens are numerous.

The fort of Malik Myandad, and another of the tribe, contains thirty houses, and 100 fighting men. There is continually rain at this place.

The fort of Saiyadee contains eighty houses, and 300 fighting men.

Description of the road from Jajee to Khushee, (where I arrived on the 2nd Safar.) in the district of Logur.

Beyond Jajee is the narrow valley of Hazardarakht, which is a complete jungle of *archah* and *sanobar* trees. Beyond this is the valley of Dreplara, which is six kos long.

Thence is the ascent of Shutar garden, where there is good pasturage. There is a mine here of a light-green-coloured stone, which is very heavy.

Beyond the Kotal or Pass, are Ghiljies and Ahmedzyes, who are dependent on Logur, as far as Khushee.

Khushee, where I arrived on the 2nd Safar, is a valley having four forts, containing two hundred houses, numerous gardens, and 50 *kulbas* of cultivated land. The number of fighting men is five hundred. There are two shrines; one known as Khoja Hasan, and the other as Khoja Khidr, where there is a Panjah. This place is a jaghire of Nawab Jabar Khan.

Zarghoon Shahr, which I reached on the 3rd Safar, is situated on a plain having small forts on the skirts of the hills. There is a shrine of Khoja Sadr-i-Auliya. The inhabitants are partly Afghans and partly Logurees, (Lahogardees). There are one hundred houses, three karezes, and three gardens. The fighting men amount to 420.

From Cohaut to Cabool, via Hango, Dar Samand, Tal, Naryab, Gun road. Kuram, Paiwar, Jajee, and Khushee, there is a gun road.

On arriving at Cabool, which I did on the 4th Safar, I received Arrival at Cabool. from Captain Burnes 20 rupees for travelling expences; remained three days and setting out, joined my employer at Completion of Tour Candahar, on the 15th Safar.

*Proceedings of the Asiatic Society.**(Wednesday Evening, 5th July 1843)*

The regular monthly meeting was held on Wednesday evening the 5th July, and by invitation from the Honorable the President, the Society assembled at Government House, its own premises being under repair.

The Honorable the President was in the chair.

J. W. FULTON, Esq. Barrister at Law, was ballotted for and declared duly elected; the usual communication was ordered to be made to him.

The following Books presented and purchased were on the table :—

Books received for the Meeting of the Asiatic Society, on the 5th July, 1843.

The Calcutta Christian Observer, July 1843. New Series, vol. iv. No. 43. Presented by the Editor.

The Oriental Christian Spectator. Bombay, June 1843, vol. iv. No. 6. Second Series. Presented by the Editor.

Jameson's Edinburgh New Philosophical Journal, Edinburgh, 1842, vol. xxxii. No. 63. (Purchased to complete the vols)

Proceedings of the Geological Society of London, vol. iii. part ii Nos. 89 and 90. Presented by the Society.

Journal des Savants, Octobre, 1842, Paris. Presented.

The Calcutta Literary Gleaner, July 1843, vol. ii. No. 5. Presented by the Editor.

The Annals and Magazine of Natural History, February and May. London 1843, vol. ii. Nos. 68 and 71. Purchased.

Yarrell's History of British Birds. London 1842, parts 34, 35, 36.

Bellefond's Memoire sur le Lac Moeris, publié par la Societé Egyptienne. Alexandrie, 1843. Presented by C. B. Greenlaw, Esq. on the part of A. S. Walne, Esq of the Egyptian Society of Cairo.

Niebuhr's History of Rome. London, 1812, vol iii. Purchased.

Antiquitates Americanæ. Edidit Societas Regia Antiquarium Septentrionalium. Studio et Opera C. C. Rafn. Hafnæ, 1837.

Chinese Drawing of the Porcelain Tower at Nankin, with description. Presented by J. McCann, Esq.

History of Hyder Naik, Nuwab of the Carnatic, published by the Oriental Translation Society, as translated from an Original MS. of Meer Hussun Ali Khan Krinnaut, by Col. W. Miles. From the Society.

The Secretary reported as follows :—

That the books sanctioned to be sent to Mr. Konig, bookseller of Bonn, in exchange for the publications forwarded by him, were in course of shipment.

That the collected amount of the subscriptions for the Kit-Cat Portraits of the Honorable Sir Edward Ryan, and the Honorable H. T. Prinsep, Esq. stood as follows :—

Sir Edward Ryan's, ... 908 Rupees.

Hon'ble H. T. Prinsep's, ... 1,051 ditto.

It was resolved, that the following gentlemen be requested to form a London Committee for the fulfilments of the Subscribers' wishes :—

For Sir Edward Ryan's Portrait :—

The Honorable W. W. Bird.*

Honorable H. T. Prinsep.

W. Prinsep.

For Mr. Prinsep's Portrait :—

Honourable W. W. Bird.

Sir Edward Ryan.

W. Prinsep, Esq.

It was brought to the notice of the Society, that it would be highly desirable if a set of the Meteorological Registers from the Bombay Observatory could be procured and regularly supplied in future, and an application to Government for them was sanctioned.

It was also stated, that the Sub-Secretary, Mr. Piddington, had sent to France to Major Troyer, the following list of incomplete French works now in the Library, most of which had been presented by the authors, or by the French Government, and it was hoped Major Troyer would be able to obtain the completion of the sets as they might appear.

List of the defective Works received from France, for the Library of the Asiatic Society.

Agassiz, Histoire Naturelle des Poissons d'Eau douce de L'Europe Centrale. Planches, 1er livraison.

Cuvier Histoire Naturelle des Poissons, up to vol. xvi. 8vo.

Quatremere, Histoire des Mongoles de la Perse, traduite en Français, tome 1er, royal fol.

Livres des Rois, traduite en Français, par J. Mohl. tome 1er.

Histoire Generale des Huns, tome 1. parties 1er and 2d, et tome II.

Histoire des Sultans Mamloks de L'Egypte, par M. Quatierere, tome 1. parties 1er et 2d.

Chronique D'Abou-Djafar Mohammed Tabari, par L. Dubeaux, tome 1er.

Jacquemont, Voyage dans L'Inde, 13 livraisons.

Ditto ditto Planches. Botanique 1er à 6, 8, à 34, 36, à 50. Poissons, 13, 15.

Reptiles 9, 10, 12 Journal, 1 à 15, 17 à 19, 21.

Agassiz, Recherches sur les Poissons Fossils, livraisons 1, 2, 4, 8 à 13.

Ditto ditto Planches, 13 livraisons.

Vendidad Sadé, par E. Burnouf, Texte Zend, 11 livraisons.

L'Espanne Artistique et Monumentale, par P. de la Escosura, 1 livraison.

Harivansa, traduit par M. A. Langlois, 1er et 3er livraisons.

* On his arrival in England

Description de L'Egypte, ou Recueil des Observations et des Recherches, Antiquités, Description, tome 1er.

Ditto ditto.—Antiquites, Memoires, tome 1er.

Ditto ditto.—Planches a ditto, tomes 1er à 5em

Ditto ditto.—Etat Moderne, tomes 1er et 2d.

Ditto ditto.—Planches, id 1er et 2d.

Ditto ditto.—Histoire Naturelle.—Planches, tome 1er et 2d

Ditto ditto.—Preface Historique et Avertissement, 1 vol.

The Secretary moved, that he be authorised to forward to Major Troyer, two complete sets of the Society's Oriental publications, with a view to obtain in return from the French Government or others, to which he might judge it advisable to present them, works published at their expence; one for the Russian, one for the Dutch, and one for the American National Institute were also mentioned. This proposal was approved of, and the Secretary was authorised to carry it into effect.

Read the following extracts from a letter addressed to the Acting Secretary, Mr. Piddington, by Professor Wilson :—

East India House, 29th April, 1843.

MY DEAR SIR,—Your communication respecting the missing copies of the Mahabharata and Journal had been anticipated by an application from the Société Asiatique, through Capt. Troyer. The books had been lying very quietly in the Library Store, as we knew not what to do with them. A letter from the Secretary to Government, to the Secretary to the Court, had been sent about the time the books were dispatched, but it did not specify for whom the books were intended, beyond the request that they should be sent to Allen and Co. The request was not attended to in the Secretary's department, nor was the letter communicated to the Library, and the books might have been here as long as the house stands, had not the application been made; a little more precision in future in forwarding any thing through the same channel will be expedient, and a private note to me intimating, that such and such books, &c. have been forwarded should always be added. Your memorandum specifies 56 copies of the 4th Vol. and 56 copies of the Index. There were no such things as the latter. There seems to be some mystery about this Index. I have applied to the Society already for copies for our Library, but no notice has been taken of the application, nor have any copies been sent to Allen. He seems to be ill supplied also with the fourth Volume, being obliged to borrow of us, and we have none to spare. It will be desirable to send home a few more copies, and to supply the 20 copies of the Index for this Library, the 56 for France, and an adequate number for Allen.* I take this opportunity of asking you, if the Society ever received any copies, and what number, of my Vishnu Purana, Sanscrit Grammar and Ariana Antiqua, and if they did receive them, I should be much obliged by being informed how they were disposed of. It is not from any curiosity regarding the Society's distribution that I wish for this information, but to guide my own. I have omitted sending copies to some of my friends in India, under an impression, that they might receive them from the Society, and I may have been mistaken.

H. H. WILSON.

* See Messrs. Allen's letter, which acknowledges receipt of these in the case per *Ellenborough*

The following report from the Committee, appointed to conduct the publication of Sir A. Burnes' Drawings, was read and approved of—

Memorandum relative to the publication of Sir A. Burnes' Drawings.

The undersigned, who are the remaining members of the Committee appointed in 1841, for the publication of Sir Alexander Burnes' Drawings, beg to bring to the notice of the Honorable the President and the Committee of Papers of the Asiatic Society.

Original Committee.

Mr H. Torrens

Dr. Spry.

Dr. Pearson,

Charles Haffnagle

H. Piddington, Secretary
to the Committee.

1. That the progress of the work is as follows:—

Drawings completed for publication,	31	0	0
Under examination, and with Messrs Ballin' people or with the Artist,	29	0	0
Being a total of,	60	0	0

2. The Society's outlay to this day has been as follows:—

Paid to Artist,	850	0	0
For paper, (Messrs. Rushton and Bazar,)	1,012	0	0
To Printers and Colourmen,	2,632	0	0
Total,	4,491	0	0

3. Each Plate of 575 impressions, (of which 550 coloured and 25 plain,) costs as follows; viz.

Drawing on stone,	12	0	0
Printing and colouring,	87	0	0
Paper,	16	0	0
Co's. Rupees,	115	0	0
For 60 Sets is,	6,900	0	0

4. There remains to complete the publication about,

90 0 0

Total Cost 60 Sets ... 6,900

" 90 ditto, ... 10,350

Total Co's Rupees, ... 17,250

If all printed, these will cost at the preceding rates,

10,350 0 0

5. But though these plates will form a great ornament to a Volume of Transactions,* they cannot of course be published without letter-press, which it was proposed should be composed of a digest of Dr. Lord's notes, with such additions as may be farther required by the Zoological Curator to the Society, than whom there is no one more capable of performing the task creditably to himself and the Society. The work thus completed, would (like Buchanan's and Russell's Fishes, or Russell's Serpents,) be of standard reference to the naturalist on the Indus, from Scinde to Attock; a foundation for much more labour of detail by future observers; and the best proof which the Society can afford of its desire to encourage every branch of the Natural Sciences, and to second, with all its means, the measures of Government when directed to these important objects.

* With Dr. Cantor's Chusan Zoology and Botany, they will make by far the most splendid work on Natural History, which has been published in India

We beg to suggest, that the Honorable the President and the Committee of Papers direct official intimation to be given to Mr. Blyth, who is already aware of the design, that the plates are in a sufficient state of forwardness to warrant the commencement upon the letter-press, as the prompt preparation of the commentary with Dr. Lord's notes for the plates already finished will enable your Committee to recommend the publication of a 1st part of Burnes' Collection, forming a portion of the volume of the Society's Researches.

The Society will obtain, from the distribution of this splendid work, a means of repaying the offerings of other learned bodies, and of greatly extending its European reputation in the department of Natural History; such being the case, your Committee submit that urgent reasons are shewn for the speedy preparation of the requisite accompaniment to the plates.

Your Committee also beg to note, that two vacancies having occurred by the death and resignation of Members of the Society, it will be expedient to add to their present number.

(Signed) H. TORRENS.

C. HUFFNAGLE.

H. PIDDINGTON.

It was stated, that a letter had been addressed to Mr. Blyth, as recommended by the Committee, of which the following is a copy:—

E. BLYTH, Esq. *Curator Museum Asiatic Society.*

DEAR SIR,—I am desired by the Hon'ble the President and the Committee of Papers to remind you, that there are now 30 of Sir A. Burnes' Drawings of the Zoology of the Indus finished and in our stores, and 30 more, in course of completion, being in the hands of the artists.

1. These 60 plates will cost in round numbers about 7,000 Rs., and there are still 90 more, of which some may be left unpublished; but the whole will, under any circumstances, involve an expenditure of at least Co's. Rs. 15,000.

2. The Society, as you are aware, contemplates making these plates part of the forthcoming volume of their Transactions, and it doubts not, with your known ability, to produce one of which it may be proud, and which the Naturalist can place side by side with those of Russell, Buchanan, and Gould; but while anticipating this, it feels most anxious, that the Letter Press should be forthwith commenced upon; for it is aware that it cannot but be ill done if done in haste, and you yourself know how advantageous it is in India, to have full time for corrections and revisions.

3. I am therefore desired to express to you, the especial wish of the Hon'ble the President and the Society, that your part of the work should be taken in hand without delay, as they naturally feel, that in so costly an undertaking, nothing should, if possible, be left to chance or done in haste.

The Society at large would also be much gratified to have your progress in the work mentioned from time to time in your Monthly Report.

H. TORRENS,

Secretary and Vice-President Asiatic Society.

A Portfolio of the finished and coloured Lithographs, with the original Drawings was upon the table, and greatly admired, as being far superior to any thing of the kind hitherto produced in India.

The Secretary stated, that in the month of January, the following letter had been received from Government :—

No. 1256.

To H. PIDDINGTON, Esq. *Officiating Secretary to the Asiatic Society.*
General Department.

SIR,—I am directed to transmit to you, Extract from a Letter from the Hon'ble the Court of Directors, No. 24 of 1842, dated 26th October, and copy of the letter from the Austrian Ambassador therein referred to, respecting the researches of the late Mr. Csoma DeKorós on the origin of the Hungarians, and to request, that copies of the papers therein alluded to, may be forwarded to this Department, for transmission to His Excellency.

I am, Sir,

Your obedient Servant,

H. V. BAYLEY,

Deputy Secretary to the Government of Bengal.

FORT WILLIAM, the 28th December, 1842.

Extract from Letter, No. 24 of 1842, from the Honorable the Court of Directors in the Public Department, dated the 26th October.

We enclose as a number in the packet, the copy of a Letter from the Austrian Ambassador, respecting the Researches of the late Mr. Csoma DeKorós on the origin of the Hungarians, and we desire, that the papers requested may be forwarded to us for transmission to His Excellency.

To the Secretary of the Honorable United East India Company

SIR,—My Government, to whom I transmitted the information which the Honorable Court of Directors of the East India Company was so kind as to forward to this Embassy, concerning the death of Mr. Csoma DeKorós, has recently expressed the desire to obtain for the Library of the Transylvanian National Museum, those of the papers (left by the deceased Traveller to the Asiatic Society in Calcutta,) which contain *Researches on the origin of the Hungarians*, and which are therefore of a particular interest for the above-mentioned Museum.

I have therefore the honor to request you may express to the Honorable Court of Directors, how much obliged the Transylvanian Authorities should feel, if by their kind intercession the Asiatic Society at Calcutta, should allow a selection to be made of those papers which so particularly concern Hungary, or copies duly legalized to be taken from and forwarded afterwards to this Embassy. I have, &c.

London, October 6th, 1842.

(Signed) NEUMAUN.

(True Copies,) H. V. BAYLEY,

Deputy Secretary to the Government of Bengal

This was sent to the Ecclesiastical Registrar of the Supreme Court for his information and for a reply, but owing, first to the non-arrival of Mr. DeCsoma's effects from Darjeeling, and latterly to the absence of Mr. Furton from Calcutta, no answer had been obtained from him till now, when the following was transmitted :—

Estate of Mr. Alexander Csoma DeKoros' Deed.

To H. PIDDINGTON, Esq. *Officiating Secretary to the Bengal Asiatic Society*

SIR,—With reference to the letter to your address from the Deputy Secretary to the Government of Bengal, No. 1256, dated 28th December 1842, together with an extract of one from the Honorable the Court of Directors No. 21 of 1842, dated 26th October preceding, and copy of the letter from the Austrian Ambassador thereto subjoined, respecting the estate of the late Mr. Alexander Csoma DeKoros, Librarian of the Bengal Asiatic Society, left by you at my office sometime ago, for the purpose of my furnishing you with the information therein referred to, I have to apologize for my not having earlier replied to it, having been left at my office when I was much engaged, and it subsequently escaped my recollection, from no letter from you accompanying it.*

I now beg to acquaint you, that I have since received a communication from the Government of India in the Foreign Department on the subject through their Attorney, and I beg to forward here with a copy of my reply thereto, which will put you in possession of all the information that I possess on the subject, and which I have furnished to the Government.

I have the honor to be, Sir,

Your most obedient Servant,

THOS. E. M. TILTON,

Registrar and Administrator

Calcutta Supreme Court, Regr's Office, 3rd July, 1843.

Estate of Mr. Alexander Csoma DeKoros' Deed.

To T. B. SWINHOE, Esq.

Attorney to the East India Company.

SIR,—I have the honor to acknowledge the receipt to your letter of the 2nd instant, forwarding to me therewith, copies of one to your address from the Officiating Secretary to the Government of India in the Foreign Department, dated 24th ultimo, and of an extract from a despatch, from the Honorable the Court of Directors, dated 22nd March, No. 6 of 1843, regarding the estate of the late Mr. Alexander Csoma DeKoros, Librarian of the Asiatic Society of Bengal, and requesting me to furnish you with the documents therein referred to, in the manner required.

In reply, I beg to state for the information of the Government of India, that the event of the death of Mr. DeKoros having been reported to me as Ecclesiastical Registrar of Her Majesty's Supreme Court, I applied for and obtained letters of administration to his estate as in case of intestacy, and under and by virtue thereof, took charge of the Government Securities which remained in the hands of the Government Agent of this Presidency.

Mr. DeKoros having died at Darjeeling, the Superintendent of the station took charge of his effects, and did, under the direction of the Government, make over the same to me as administrator to the estate.

In June last year, Mr. Henry Torrens, as Secretary to the Asiatic Society of Bengal, addressed me a letter, handing to me therewith one in original to his address, from the late Mr. DeKoros, dated Calcutta, 9th February, 1842, and making an enquiry whether I, as administrator of Mr. DeKoros, with the full consent of the Socie-

* There is some misimpression here on one or the other side, but of no great moment either a letter was sent, or the paper was left by me personally.--H. P.

ty, would feel justified to act on the orders of the deceased, by making over the funds and effects that might come into my possession in my official capacity of administrator of the deceased, to the President and Secretary of the Asiatic Society, under their indemnity, against the claim of the next of kin of the deceased.

Although I have not yet given any official reply to the above query, yet I have personally explained to Mr. Torrens, that I am not justified in supporting the claim of the Society under the directions contained in the deceased's letter, nor am I at liberty to treat it in any manner as a valid testamentary disposition of the deceased's property to the prejudice of his next of kin with reference to the late Act relating to Wills.

The Superintendent of Darjeeling has also lately made over to me on my application, the Tibetan Manuscripts collected by the deceased, which I intended to have made over to the Asiatic Society in deposit, on the guaranteeing to take due care of them, and to return them in case the next of kin of the deceased should not assent to their continuing there, and should require such re-delivery.

I beg to forward herewith, an exemplification of the letters of administration to the estate, authenticated copies of Mr. Torrens' correspondence with this office, and of the letter of Mr. DeKoror in favor of the Society, together with a copy of the Registrar's account current with the estate, made up to the 8th instant, exhibiting a balance on that day, in its favor of Sa. Rs. 3,000, and Co.'s Rs. 2,000 remaining invested in 5 per cent. Government Securities, and Co.'s Rs. 21. 13. 5, in cash, and 26 gold Dutch coins or ducats, and shall be obliged by your forwarding them to the Government for their transmission to the Honorable the Court of Directors, for the information of the next of kin of the deceased.

I have the honor to be, Sir,

Your most obedient Servant,

(Signed) THOMAS E. M. TURTON,

Registrar and Administrator.

Calcutta, Supreme Court, Regr's. Office, 25th June, 1843.

Read an application, transmitted by the Honorable Sir J. P. GRANT from Ramjoy Turlonkar, Pundit of the Supreme Court, stating, that as the Society had obligingly presented to him the first three vols. of the Mahabharata, he trusted that it would kindly complete its gift by that of the fourth volume now published. Ordered,--That the fourth volume and a copy of the Index be sent to the Pundit through Sir J. P. GRANT.

Read an application from A. A. SEVESTRE, Esq., requesting to be allowed to contribute to the subscription for the Portrait of Mr. H. F. PRINSEP, which was granted.

Read the following letter from Messrs. Allen and Co.

To H. PIDDINGTON, Esq.

Acting Secretary to the Asiatic Society of Calcutta.

London, 29th April, 1843.

SIR,—We have the pleasure to acknowledge the receipt of Mr. Torrens' letter as Secretary to the Society, dated 16th February last, acknowledging several of our communications and our account up to the 30th June last. We propose to render the continuation of the account at the expiration of a year from the date of the last.

We beg to call the attention of the Society to the paragraph of the letter of the 16th February, referring to Arrowsmith's Map of India, and also to enclose a copy of the original order for it. By it you will see, we had not the liberty to act for the Society, and we therefore complied strictly with the order, and forwarded "Arrowsmith's latest Map of India of the largest size," which is more than double the size of our Map, and we concluded was well known to the members of the Society. We need not point out how much more advantageous it would have been to us to have supplied the Society with our own publication, but we should not have been justified in doing so, when "Arrowsmith's" was expressly ordered.

It will be evident to the Society, that we are not in fault in sending Arrowsmith's Map, and we trust on a reconsideration of the matter, the Society will remove the Map from Messrs. Thacker and Co., where we are informed it had been sent for sale on our account. Had we committed an error, we would willingly have borne the loss of the price of the Map, viz. £18 10

The cases of books per the "*Ellenborough*" shall have our attention, they have just been received.

The books ordered in your letter of the 3rd February for the Society are not all of them procurable. No. 1 of Gray's *Spicilegia Zoologica* is only just published. Leach's *Zoological Miscellany* cannot be heard of, and we suppose it to be an American publication, it will be obtained if possible. "Audubon's Ornithology," &c. is not yet published. "Gray's Genera of Birds," will be sent with the part of his other publication, by the next ship, and will be delivered to you by Messrs. Thacker and Co.

We are, Sir,

Your most obedient Servants,

W. H. ALLEN & Co.

It was determined that under the circumstances, the Society would receive the map; and the Honorable the President intimated, that upon his arrival in England, he would forward to the Society, a first rate recent map. The special thanks of the Society were voted for this very liberal offer.

Read the following letter from Captain D. WILLIAMS, Assistant Commissioner, Arracan:—

Ramree, June 12, 1813.

MY DEAR SIR,—I beg to return my best thanks for the Birman Code of Law; it appears to be a collection of cases for easy reference; the *Dammathul* is a voluminous code, and is not to be obtained, I believe, complete in this province. It is arranged under distinct heads, has every other mark of being a genuine Code of Laws, and the Mugs have a great partiality and reverence for it. Seldom would they transgress it even for their advantage: for instance, mortgaged lands are surrendered to emigrants in this district after 40 and 50 years' absence, so sacred do they consider their law on this head, and they could evade it by coming into our Courts, as we give a contrary decision, by which they would keep possession they have no Limitation Laws in such cases.

I have sent to Chedooba for the coins, and when I have received them, I will have great pleasure in sending you for presentation to the Asiatic Society two coins. There are eight in a good state of preservation, and many pieces, four of the former I

must send to Lieut. Phayre, the Assistant Commissioner at Sandoway, according to my promise.

Lieut. Phayre is a good Birman scholar, and his information regarding the "Dummasat" would be very valuable to you. He is now compiling a list of Kings of Arracan of the Mug dynasty, and of Governors of the Province under the Burmese rule, from a valuable collection of coins in his possession, its perusal will no doubt be enjoyed by your Society.

I forward to Lieut. Phayre, the copy of the Dummasat and your letter, requesting he will communicate to you his opinion.

Your's truly,

D. WILLIAMS.

Read the following letters from the Secretaries to the Government of India and Bengal :—

No. 682.

From the Secretary to the Government of India, with the Governor General, to Secretary to the Asiatic Society at Calcutta.

Foreign Department.

SIR, —Under instructions from the Right Honorable the Governor General, I do myself the honor of placing at the disposal of the Asiatic Society, the accompanying Report from Captain Graham, on the Manners, Customs, &c. of the people of Shoa, and an Historical Account of the Abyssinian Church by the same gentleman.

2. As these documents are originals, I have to request that you will be good enough to make them over when done with, to the Officiating Secretary at the Presidency Office, for record.

I have the honor to be, Sir,

Your most obedient Servant,

J. THOMASON,

Allahabad, 13th June, 1843

Secretary to the Government of India,
with the Governor General

No. 575

From Under-Secretary to the Government of Bengal, to H. FORRENS, Esq., Secretary to the Asiatic Society.

SIR, —I am directed to transmit the enclosed Report by Capt G. B. Tremenhoe, Executive Engineer, Tenasserim Provinces, of a Visit to the Pakchan River and some Tin localities in the Southern portion of the Tenasserim Provinces, together with a Sketch which accompanied it

2. The Military Board, in forwarding the above Report, have intimated, that the specimens of Tin therein referred to, will be forwarded by Captain Tremenhoe, when received, to the Curator of the Museum of Economic Geology.

I am, Sir,

Your most obedient Servant,

Fort William, 5th June, 1843.

A. TURNBULL,

Under-Secretary to the Government of Bengal

Mr. Piddington presented a paper for the Journal, being a translation of (with remarks) M. Stanislas Julien's remarks on the study of the Chinese

Language. He also exhibited the charts to his Eighth Memoir on the Law of Storms, (the Madras and Arabian Sea Hurricane of October 1812,) now in the Press.

The Librarian presented the classified catalogue of the European Books in the Society's Library, which is now printed, and for distribution to Members.

Mr. BLYTH presented remarks on the Zoology of the Tenasserim Provinces, which will be farther alluded to in his report.

Read the report of the Curator Museum Economic Geology for June.

Report of the Curator Museum of Economic Geology for the Month of June.

Geological and Mineralogical.—We have received here, through Messrs Allan, Patton and Co. from Major Sleeman, as executor to the estate of the late Dr. Spry, three mahogany cases, containing a considerable number of Geological and Mineralogical specimens, with a few corals, &c. some of these are in a state of sad disorder from being separated from their labels or envelopes, and evidently tossed about in utter confusion. I shall however be able, I hope, to verify the localities of most of the Geological specimens. None of these are complete series or collections, (with the exception of a small set of specimens from the Fort boring,) but a number are rare; many will fill up blanks in our cabinets, or replace inferior specimens, and are thus most acceptable to us.

I have now finished collecting from the Hoogly opposite to Calcutta, and from Burrisal at the other extremity of the Delta, two bottles of water for each month in the year, to ascertain the quantity of silt brought down by the river. I propose, with the approbation of the Society, forwarding one set of these to the Geological Society, with a request, that part of the silt may be sent to Professor Ehrenberg for examination as to the infusoria which it may contain; a question of very high interest to us here, as well as to the scientific world at home.

I mentioned in my preceding Reports, that through Mr. Howe's kindness, we had been provided with a large assortment of the shales and mud thrown up by the Volcano of Ramree; these I have divided into eight handsome sets, as follows.—

Memorandum of specimens from the Mud Volcano of Kyook Phyoo, collected immediately after its remarkable eruption of midnight 6th and 7th February, 1843.

A.—A bottle of the mud taken in a boiling state from the crater.

B.—Half calcined mud, taken from the walls of the crater.

N. B.—In some of these specimens, fruits and seeds of the surrounding bushes are found half burnt, but not destroyed.

C.—Mud from the neighbourhood of the crater, ejected from it in the eruption

D.—The same with grass, &c enveloped in it.

E.—Mud indurated to shale, with veins of porcellaneous (*aluminous* ?) earth and calc spar ejected from the crater.

N. B.—Thin plates of this calc spar found amongst the mud; the largest in the Museum of the Society being about 6 inches by 4, and evidently detached from the shale

F.—Indurated and laminated shale, sometimes approaching to sandstone, ejected from the crater, sp. gr. 2.5.

G—Red shale indurated to a sandstone, (probably from the heat under pressure,) ejected from the crater, sp. gr. 2.6.

A single specimen in the cabinet of the Asiatic Society is red at one end, grey at the other, evidently shewing that they are derived from each other.

II.—Burnt sticks picked up shortly after the eruption about the crater.

Besides keeping our own cabinet well supplied, I proposed, with the approbation of the Society, forwarding these as occasion may offer as follows —

- | | |
|------------------------------------|---|
| 1. Hon'ble the Court of Directors. | 6. University of Christiana. |
| 2. Geological Society. | 7. Geological Society of Pennsylvania. |
| 3. Société Géologique de Paris | 8. Academy of Natural Sciences of Philadelphia. |
| 4. Royal Cornish Association. | |
| 5. Sir H. T. De la Beche | |

Museum of Economic Geology.—We have received from Lieut Phayre, Sandoway, a set of clays from that place, six in number, and specimen of the best Tobacco soil, as also a porcelain clay from Bassem. His letter is as follows —

Sandoway, May 5, 1843.

MY DEAR SIR,—I have the pleasure to send you a box, containing specimens of the clays and earths of this district. All the brick clays are from the immediate vicinity of this town. I send also a specimen of Tobacco soil from the best Tobacco district here. I am aware that you have formerly analysed Sandoway Tobacco soils, but do not know whether those were procured, as this is, from the most famous Tobacco land or not. There is no pottery of any kind made here, I am sorry to say.

The white clay is said to be that from which the well-known *Pegu* pottery is made; it was brought from Bassem. Will you have the goodness to apply on board the H. C. S. *Amherst* for the box to your address

A. P. PHAYRE

We have also received from Lieut. H. C. Mayne, Adjutant 4th Nizam's Horse, specimens of the salt of the Loonar Lake, with the following letter. —

Mominabad, May 26, 1843.

MY DEAR SIR,—In reply to your letter of March 22nd, I beg leave to forward for the Museum Economic Geology of India, a specimen of the salt of the Loonar Lake.

You will perceive that the specimen is composed of three distinct species of salt. Large incrustations of this are left all round the edges of the lake, caused by the quick evaporation of the water by the sun, and partly from the foam of the wavelets as they beat on the shore.

The situation of the Lake of Loonar, is about midway in a direct line from Jaulnah to Hingolee, longitude about $76^{\circ} 45'$, latitude about $20^{\circ} 1'$. Hoping that this may prove an addition (however small) to the Museum, I shall use my endeavours to procure for its use, any interesting and curious specimen that may come within my reach, but not being a scientific character, I may be excused if I ever forward specimens, &c. which the Museum may already possess, or of so common a description, as not to be worth having.

H. C. MAYNE,

Lieutenant, Adjutant 4th Nizam's Horse.

P.S.—I have dispatched the piece of salt by this day's banghy to your address."

It is fortunate that we have in Dr. Voysey's Notes, a capital account of his visit to this very curious spot, with a sketch. It is too detailed to insert here, but will form an early paper in the Journal. Lieut. Mayne, in his chit alludes to common salt, while Dr. Voysey says, that merely traces of it were found in the water. It is evident from the specimen on the table, that common salt exists at the bottom of the lake, as well the carbonate of soda. From what Dr. Voysey says, it would appear that he visited it when the water was near the highest point, in July, and the fresh water would then lie above that impregnated with saline matters.

Having to call upon Mr. Weaver, the statuary, I requested of him the favor of sending to the Museum any fragment of marbles which he might have. He has sent us some, and in addition to them, a few very handsome specimens of petrified wood and tubicolæ dug up at Sheerness dock yard, which are a very welcome addition to our Geological and Mineralogical cabinet.

A very pretty collection of mostly South American Birds, the property of Sr. Apparuti, was exhibited for purchase. No price having been fixed, it was determined to offer for it the sum of Co.'s Rs. 150, as being one containing specimens, nearly all of which were acquisitions to the Museum.

For all the foregoing presentations and contributions, the thanks of the Society were ordered.

Oriental Publications for Sale, at REDUCED prices, by the Asiatic Society.

	WORKS.	Rs.	Former Price.
Mahābhārata, vol. 1st. pages 831, vol. 2d, pages 868, vol. 3rd, pages 859. vol. 4th, pages 1007. royal 4to.	40	48
Large paper do. do.	50	61
Index to the 4 vols. of the Mahabharat complete.	6	0
Harriwansa, 503 pages, royal 4to.	5	6
Kāja I aranginī, 440 pages, 4to.	5	20
Large paper, do. do.	8	12
Naishada, 917 pages, 8vo.	6	6
Sausruta, 1st vol. 378 pages, 2d vol. 562 pages, 8vo	8	8
Fātawé A'lemgiri, 1st vol. 763 pages, 2d vol. 759 pages, 3d vol. 555 pages, 4th vol 769 pages, 5th vol. 697 pages, 6th vol. 667 pages, royal 4to per vol.	8	10
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Jawānu ul Ilm ul Riāzi, 168 pages, with 17 plates, 4to	4	4
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		Rs. As.	
Burnouf et Lassen, Essai sur le Pali, ou Langue Sacree de la presqu'île au delà du Gange. Paris, 1826, pages 222, 8vo.		
Elémens de la Grammaire Japonaise, par M. M. Rodriguez et Remusat. Paris, 1825, pages 158, 8vo.		
Ditto ditto Supplément. Paris, 1826 pages 31. 8vo.		
Contes Arabes, traduits par J. J. Marcel. Paris, 1835, avec notes, vol. I. pages 481, vol II. pages 496, vol. III. pages 508, 8vo.		
Brosset, Elémens de la Langue Georgienne. Paris 1837, pages 122, 8vo.		
Klaproth, Vocabulaire et Grammaire de la langue Georgienne. Paris, 1827, pages 232, 1st part, 8vo.		
Cronique Georgienne, traduite par M. Brosset, Text and Translation. Paris, 1830, pages 370, 8vo.		
Choix de Fables de Vartan, en Arménien et en Français. Paris, 1825, pages 96; 8vo		
Elegie sur La Prise D'Edesse, en Arménien. Paris 1828, pages 112, 8vo.		
Chrestomathie Chinoise—Chinese Characters, 1833, pages 183, 4to.		
Meng-Tseu, texte Chinoise, pages 161, 8vo	3	0
Meng Tseu, traduction Latine, par S. Julien. Lutetia Parisiorum, 1824, pages 593, 8vo.	6	0
Lassen, Institutiones Linguae Practicae Bonnae ad Rhenum, 1837, pages 167, 8vo		
Lassen, Anthologia Sanscritica Bonnae, 1838, pages 371, 8vo.		
Lassen, Gita Govinda, Sanscrit et Latine. Bonnae ad Rhenum, 1836, pages 180, 4to.		
Chezy, Yajnadattabada, ou La Mort D'yadmalatta, Text, Analysis and Translation Paris, 1826, pages 142, 4to		
Chezy, La reconnaissance de Sacountala, Text and Translation. Paris, 1830, pages 665, 4to.	10	0
Geographie D'Aboulféda, Texte Arabe. Paris, 1837-40, pages 586, 4to	5	0
The Travels of Ibn Batuta, translated from the Arabic Manuscript, by S. Lea. London 1829, 213 pages, 4to.	6	0
The Travels of Macarius, translated by F. C. Belfour. London, 1829, pt. I. 114 pages, 4to.	4	0
Memoir of the Emperor Jehanguire, translated from the Persian Manuscript, by Major D. Prieu. London, 1829, 141 pages, 4to.	4	0
History of the Afghans, translated from the Persian, by B. Dorn, part I. London, 1829, 184 pages, 4to.	5	0
Han Koong-Tseu, or the Sorrows of Han, a Chinese Tragedy, translated by J. F. Davis. London, 1829, 28 pages, 4to.	1	8

JOURNAL

OF THE

ASIATIC SOCIETY.



Report on the Manners, Customs and Superstitions of the people of Shoa, and on the History of the Abyssinian Church. By Captain GRAHAM, B. A. from the Secretariat of the Government of India.

From Captain W. C. HARRIS, Engineers, late on a Mission to the Court of Shoa, to J. P. WILLOUGHBY, Esq., Secretary to Government of Bombay, dated 8th May, 1843.

SIR,—I have the honor to forward the accompanying able reports by Captain Graham, on the Manners, Customs and Superstitions of the people of Shoa, and on the History of the Abyssinian Church.

2d. These reports complete the information which was required by the instructions that I had the honor to receive from you.

I have the honor to be, &c.

(Signed) W. C. HARRIS,

*Capt. Engrs. late on a Mission to the Court of Shoa.
Bombay, 8th May, 1843.*

Report on the Manners, Customs and Superstitions of Shoa.

The last known tale of a plausible adventurer in this country has been wrought up with the most meretricious tinsel to serve a specious design on this country of the Christian savage, but all works, both ancient and modern, have succeeded in casting a film over the eyes of the deluded public, which honesty loudly calls out to withdraw. The king of

of Shoa indeed forms an exception to most of the sweeping vices which disgrace the land, and his master of the horse has imitated his laudable example ; both have been blessed with natural endowments, which in a more favored country, would have thriven to maturity, but sad though the truth may be, after months' wearisome endurance and patient research, there is to be found no third individual to add to the limited number of the praiseworthy.

2d. The nation is priest-ridden and bigotted to a degree. The most ridiculous doctrines must be believed, and the most severe fasts and penances must be endured, according to the pleasure and fiat of the church. Twelve thousand clerical drones, "*Fruges consumere nati*," fatten in idleness on the labour of the working classes, and even the sites of their habitations tend to rivet the chain of bondage, which encircles the neck of the infatuated Abyssinian. On the very summits of the ranges, stand the churches and the monasteries high over the vales, and perched among the few remaining groves, dotting the cool shady peaks, and far elevated in their pride of place, above the residence of the common herd. The priestly intimation is received with more attention, issuing from a temple, shrouded from human ken in the thick heavy fog, and the thunder of excommunication is listened to with utter abasement and prostration of spirit, proceeding from the grand scene of elementary strife, and falling upon the ear of the awe-stricken serf, amidst the prolonged echoes of the confirming thunder of heaven.

3rd. The king however, has lately taken upon himself to proclaim by the voice of the herald, and the beat of the drum, those doctrines which *he* conceives to be most conducive to salvation, and by the summary deposition of the refractory spiritual chiefs, and confiscation of their property, he bids fair in time to promulgate a most curious religious code of his own, if not upset by a civil war, which may blaze out in consequence of his innovations.

4th. The land swarms with monks and anchorites, who are clothed in yellow dresses, or in the prepared skins of the antelope, and who, from the licentiousness of their manners, roam through the country a perfect pest and plague to society. Men become monks at any period of life. The rich deliver over their property to their children, who are bound to support them until their death. The poor live upon the

bounty of the community, and many never enter the huts of the monastery, but with their wives reside at ease in their own homes, having joined the order for the mere sake of defrauding their creditors ; for however deeply involved, the donning of the head dress, and the monastic habit clears off all former scores, with the ease and rapidity of the most indulgent court of insolvency.

5th. The skin of the (algeazine ?) is adopted as a dress by all who cover under the garb of humiliation a deep-rooted pride of their institution, and together with the unwashed person is meant to commemorate the legend of their great founder, Istathios, who boasted of no ablution during a long term of existence, and who miraculously crossed the river Jordan, floating secure upon his greasy skin. The prophet Samuel is also sometimes referred to, as affording another example of the advantages of the covering of hide, and the story relates, how he sailed in company with his disciples for seven days' journey on the surface of a great sea, borne in safety upon the leathern robes which formed the only mortal attire in those ancient days.

6th. Although monasteries are rife over the face of the country, yet the mountain Azzulo, situated near the river Hawash, is celebrated as the most sacred seat of monkery. The mountain continually emits dark smoke, and its only inhabitants are Christian fathers, who despising the world and its vanities retire thither, unmolested by Galla or Mahommedan, to spend their days in blissful peace and retirement, universally looked upon and feared as sorcerers ; they are said to live on the most social terms with the lions and wild goats which abound upon the hill. The reception of youth as novices is by no means sanctioned by the monopolizing elders, to whom the tale assigns an exclusive subsistence upon the fruits and herbs and roots, which together with a pair of wings, are freely furnished them from heaven ; but none of those who have as yet returned from the pilgrimage are stated to have brought back their feathered appendages, and the lank figure and dim eye betoken rather the toil of the weary wayfarer than the high enjoyment of Elysian feasts.

7th. The small encircling cord of silk round the neck, called the "Matab," is the emblem of the debased Christianity which exists throughout the land, the color is deep blue in reference to the smiling sky of heaven, and the turban of the priest and the monk is designed

to commemorate the event of Moses covering his face on the mountain of fire, when receiving the tablets of the law.

8th. Uncharitable and uncompromising, the dread anger of the Church often blazes forth into the furious blast of excommunication, and the souls of men are consigned to perdition for the most trifling offence.

9th. The bell, book and candle, can be hired by any disappointed enemy, and the hooded priest can be purchased to perform the ceremony, but the question in some cases is not without difficulty and danger to the officiating clergy, especially when sacred majesty is concerned, or where the sturdy sons of Europe come under the ban of the Shoan Church. The cells of the state prison often enclose the fanatic priest, whose want only interferes with the royal salvation; indifferent fare and close confinement ensure an absolution, and the martyr to religious intolerance is expelled from the country.

10th. The *argumentum baculinum* is the only other antidote, and possesses a wonderful effect in stilling the storm, when persuasively applied to the shoulders of arrogant Church pride.

11th. On the latest occasion of the ceremony being performed upon the fair sons of the North, the priest was quietly laid hold of, and introduced into the interior of the domicile, where his countenance considerably drooped at the sight of an unwelcome host just arrived with a most formidable cudgel. "My father must have been mistaken," was the opening address which saluted his astounded ear, whilst the cudgel descended upon his shoulders with an equally startling salutation. "My father never could have purposed the excommunication of his dear friend," followed the exordium, and the cudgel again pattered upon the priestly back; a most able running commentary was sustained for nearly five minutes, attended by many playful taps upon the head to quicken the clerical understanding, and on the termination of the conclusive argument, the priest willingly withdrew his ban, bestowed his entire absolution and sneaked away to his cell, mentally resolving never again to interfere with those most incomprehensible Europeans, who displayed so little terror at being cursed by the Church, and who entertained no respect whatever for the sacred persons of her ministers.

12th. The Negus, however, is the true God of their adoration, and the essence of this devotion pervades the band to its very core. The best

portions of the country pertain to His Majesty ; the lives and property of the subjects are entirely at his disposal ; every act is performed with some view to forward his pleasure ; and all wait on his sovereign for favor, preferment and place. Mild, however, and just in his disposition, he is universally beloved in his own dominions in which the oath is by the life of the king in the land, wise and warlike in his expeditions, he is feared and respected among all the adjacent tribes ; conducting himself with that easy freedom which generally distinguishes conscious superiority, his demeanour is kingly and commanding, and his character for impartial justice has obtained for him far and wide, the enviable cognomen of " the fine balance of gold."

13th. Here the precious metals form the exclusive privilege of royalty. Personal ornaments and colored raiment are prohibited to the subject by the severest sumptuary laws, and few, except the highest chiefs and warriors of the land, are ever honored by an exemption from the rule. All the appointments in the country are at the king's disposal. All rewards and favors come from the royal hand in years of famine. Food itself is only to be obtained from the royal store houses, and it is therefore by no means surprising, that the population should be mean, cringing and servile ; that they should in their aspirations after honor and place, submit every action of their life to the despot's will, and in their present benighted social condition, even bring their wives and daughters to pander to the despot's pleasures.

14th. But Sabela Selassee is an unique specimen of absolute power, and the iron sceptre falls light from his merciful hand even on the head of the offender. His virtues are many and conspicuous ; his faults entail harm chiefly upon himself ; and the expenditure of the greatest part of his hours might be held up as a worthy pattern for imitation for all.

15th. After religiously performing his devotions early in the morning, he inspects his stables and workshops, bestows charity on the assembled poor, despatches couriers, and gives private audiences of import, and afterwards reclining upon his throne in state, he listens for hours to all the appeals from his subjects.

Here access is easy. The king listens to all foreigners and subjects, men or women, rich or poor ; every one has a right to appear before him, and boldly to explain the nature of his case, and although established

custom obliges the subject to prostrate himself, and pays rather adoration than respect, yet every complainant may tell his story without the least hesitation or timidity. Judgment is always prompt, and generally correct. At three o'clock His Majesty proceeds to dine alone, and after the royal appetite is appeased, the doors are thrown open, and the long table in the great eating hall is crowded with the most distinguished warriors and guests; harpers and fiddlers perform during the entertainment, and singers lift up their voices in praise of his magnificence and liberality; but the king during all this scene of confusion and turmoil, still continues to peruse letters and issue instructions until the table has been three times replenished, and until all of a certain rank have freely partaken of his hospitality. At 5 o'clock, he retires with a few of his choice friends to the private apartments. Prayers and potent liquors pass away the evening hours, and the company depart, leaving only the favorite page to convey to the inmates of the Harem, the royal commands.

Midnight calls his Majesty from his couch to the perusal of psalms and holy writings; a band of sturdy priests in his immediate vicinity during the live-long night continually chaunt a noisy chorus of hymns, to preserve their master from the influence of evil spirits and bad dreams, and daylight brings a repetition of the busy exercise on horseback, when business or the fickle sky will permit.

17. The nation displays a strange medley of good and evil, mildness and cruelty. Superstition, religion and fanaticism in venerating the sovereign, and dealing out largess to the poor. They are drunkards and liars of the first magnitude, and their minds being insensible to the charms of exalted virtue, they are restrained from evil deeds by no moral influence whatever. Kind to their animals, slaves and females, they practice every species of barbarity upon their enemies, and are perfect fanatics in their religious creeds which are of the most subtle nature. They are fiercely arrayed against each other in hostile sects, and are only prevented from carrying on war to the knife, by the local difficulties which separate the parties. Easily irritated, their anger blazes up into a fierce flame of passion, but like the crackling thorns, it is soon expended; dull in comprehending a joke, they delight in the broad antics of the court buffoon; and violent and litigious in their private dealings, they are still not disposed to carry their wrath to extremity, or to allow amongst

each other the brutal feelings to exercise an entire predominance, restrained by the wholesome law of blood for blood, and life for life.

18. The principal men of the country who are not entrusted with government, spend their time in utter idleness, lounging about the purlieus of the court, or gambling for hours at the game of *gibbeta*, leaving the management of their houses to their women, and the direction of their farms to their servants and slaves. All, however, end their day at 4 o'clock, when the king's table is thrown open to men of rank, and when the king's potent hydromel very soon incapacitates them for any further thought or deed. The most slovenly appearance marks the interior of their houses, and dirt and filth choke up the surrounding enclosure. The furniture is confined to a rickety bedstead, a bullock hide, and a small wicker table; the necessary wood fire in the centre of the solitary apartment blackens every article within the walls with a thick crust of smoke, presenting a most gloomy vista on entering the doorway, and the universal objection to the use of water, either as regards their person or clothes, renders the foul tableau still more disgusting.

19. Water as well as coffee and tobacco are studiously avoided, as savouring too strongly of Islamism, and the Christian inhabitant contents himself with rubbing his eyes in the morning with the dry corner of his dirty robe, and pouring a stream of rancid butter over his matted locks.

The dress of the men, from the king to the peasant, consists in a large loose robe of thick cotton cloth, enveloping the body in graceful folds; but nearly incapacitating the wearer from any great exertion on foot; frequently disconcerted and falling upon the ground, the wearer is every moment obliged to tuck up this most troublesome garment, and fold it anew about his body; a cotton waist cloth of many yards encircles the loins, and a pair of very wide trowsers hanging barely to the knee, sum up the ordinary toilet; although during journeys and expeditions, the skin of some wild animal fashioned somewhat into the form of a cloak is worn over the shoulder.

20. All carry a short crooked sword bound tight on the right side, which requires constant oiling, and some portion of personal strength to extract from the sheath; and entertaining a wonderful affection for the stick, no man ever stirs from the house, either mounted or on foot, without the long thin wand. Too lengthy to be of any use in urging on his animal, and too thin to support any weight as a staff, the inconveni-

ence is endured to keep the hand in constant practice for carrying the beloved spear. The clergy are more sensible in their predilections, and their stout staff with an iron crutch as a handle, is a very laudable instrument indeed, either for support or offence.

21. The men scrupulously denude their cheeks and chins, in the absence of the razor clipping with a pair of very indifferent scissors all the hair close to the skin, and thus adding very considerably to the dirty appearance of their unwashed faces; but the greatest attention is paid to the management of the hair, with which nature has most liberally supplied the head, and many hours are daily expended in dressing the mop into many and quaint fashions. It is sometimes worn hanging in long clustering ringlets over the cheeks and the neck; at other times frizzed into rounded matted protuberances, which are studded over the greasy block, often fancifully tucked and trimmed into small rows of minute curls like a judge's wig, and again boldly parted into four large compartments like jelly moulds, but always reeking with rancid butter, and exuding a most disagreeable effluvia.

22. The clergy wear a high white cotton head-dress and black woollen cloak, with coloured emblems of the faith attached in every direction for public view. Treated with highest respect and veneration, they are always addressed as Father, caressed and fed wherever they choose to turn their footsteps; all the natives fully believing that the kissing the hand of one of these dirty shepherds, purifies the body from every sin.

23. The colour of the Abyssinian race varies from a bright copper to the deep jet black; the men are by no means particularly handsome, but the features of the women are of an inferior and more disagreeable contour than those of most nations in the world. Small eyes and flat noses are added to high cheek bones, low foreheads and a broad expanse of countenance, and their attempts are exceedingly ingenious to render more hideous the uncomely appearance which nature has thought proper to bestow upon them.

24. The eye-brows are totally depilated, and a deep narrow line painted in their room with a strong permanent blue dye, bestowing a more than ordinary look of foolishness, whilst the cheeks of the high-born dames are plastered to the very eyes with red paint and fat; the hair is also either cropped, frizzed and besmeared with tallow

into a most frightful consistency, resembling in appearance and size an ordinary English bee-hive, or the bare shaven head is encircled by a narrow dirty fillet; and their feet, naked and exposed to all seasons and weather, become hard, horny and mis-shapen.

25. Their only dress consists of a large wide sack chemise, bound round the waist by a thin rag, and a long sheet thrown over the head descending to the heels, which like Ruth's veil is very coarse and strong, and fully capable of containing six measures of wheat. Their ornaments are large black wooden studs in the ear, which on holidays are replaced by masses of pewter resembling the teething rattles employed in nurseries; pewter bracelets and anklets, together with a profusion of blue and gold colored beads are worn by all who can afford the outlay, and the dirty toilet is not complete without a stream of rancid butter upon the hair, and the nostrils securely plugged up with lime peel or sweet herbs, leaving the end of this strange nosegay dangling over the wide mouth. They soon ripen and grow old, girls becoming mothers at the early age of twelve; but like the fruit of the medlar, they are rotten before the summer of life has well commenced.

26. All classes are most pertinacious beggars, every thing seen is demanded; knives, scissors, beads, cloth, looking glasses and dollars; the love of acquiring property stifles every sense of shame, and they feel no compunction in asking for the cloak off your back, or of carrying it away, even during a heavy storm of rain; they even take a pride in this national feeling, and say, that an Abyssinian child will stretch out its hand to receive a present before it be born; and their tradition hands down as most praiseworthy the conduct of one of their great chiefs, who on his death-bed desired his body to be buried in the track of a caravan, that if possible his spirit in the future state might be in the way of receiving a toll from the passing merchant.

27. Warm butter mixed with honey and the seeds of the *hubbesh*, is given to an infant immediately on its birth, and circumcision follows on children of both sexes on the seventh day. The operation, performed generally by an old Galla woman, is exceedingly painful, and is often followed, especially in females, by the most serious consequences in some districts. A male child is carried in the hands of men to the Church on the fortieth day, and a female is borne by

women on the eightieth, when it is christened after the Abyssinian ritual. The right of bestowing the name upon the boy belongs to the father, whilst the mother exclusively chooses one for her daughter. A grand entertainment to the priests finishes the ceremony, and the bearers of the infant to the church are considered its Godfathers and Godmothers, and are expected to treat the child with all affection during the scenes of after-life.

28. Invariably it is carried tied up in a bag at the mother's back until it can walk; the cramped confinement seemingly produces no evil result upon the symmetry of the child, and the extra burden interferes but lightly with the severe labour which in this country is the lot of the hard-worked female.

29. Education is at a very low ebb indeed, and those children are alone instructed in the rudiments of learning, who are intended for the service of the Church, or for the priestly office. The five churches of Ankobar have each their small quota of scholars, but the amount altogether does not reach 80 out of a population in the capital of 8,000; the remainder run loose and disorderly like wild colts, until the season arrives when they are caught to be employed in drudgery.

30. After the age of 5 or 6, they are employed as servants, and set to work in the fields, and to fetch wood and water for the family, and the greater part at the age of 12 or 14 forsake the paternal residence to seek a livelihood in the service of the king or the great men, and as their pittance is but scanty, they can save nought from their wages, and are thus forced to remain in servitude during the residue of their existence. The favorite son remains with his father; begins to have some authority in the management of affairs about the age of 15; then chooses for himself a wife, and engages in the usual avocations of tilling the ground, repairing the house, and attending the king's military expeditions.

31. A girl is reckoned, according to the value of her property; and the heiress of a house, a field, and a bedstead is certain to add a husband to her list before many suns have shone over her head. In Shoa, marriage is generally concluded by the parties declaring before witnesses, that by the life of the king, they intend to live happily together, and the property of each being produced is carefully valued. A mule

or an ass, a dollar, a shield and some spears on the one side are noted against the lady's stock of wheat, cotton and bedstead; the bargain being struck, the property becomes joint for the time, until some quarrel ensues, when each taking their own, depart to seek fresh mates.

32. Men and women eat together at the same table, and most affectionately pick out the choicest morsels from the common dish, and stuff them into each other's mouths at arm's length. The appearance of the large foolish black face bending over the table, with the wide gaping mouth to receive the proffered tit-bit of raw flesh, which from its size requires considerable strength of finger to cram into the open aperture is sufficiently ludicrous, and brings forcibly to the recollection the nest of toad-like sparrows in the garden hedge at home gaping to the wanton whistle of the truant schoolboy. The meals are generally taken twice during the day, once at noon and again after sunset.

33. There exist two sorts of marriage, the one before-mentioned, and another which is celebrated by the Church somewhat in a similar fashion to our own; the parties swearing to take each other for life, in richness and poverty, sickness or health, which is ratified by partaking together of the sacrament, and by the usual oath of the country, the king's life. The inhabitants of Shoa, however, do not relish this fast binding, and the ceremony is seldom requested or performed.

34. Favorite slaves and concubines are equally respected as wedded wives, and there is no difference between legitimate and bastard children. The example set by the monarch, who in addition to his lawful spouses, entertains upon his establishment upwards of 500 concubines, is followed by all who can afford the expense; and the wandering life of the court renders the system of concubinage more agreeable, and less expensive, than the continual movement of legal wives and families.

35. The king dwells only for a time at one palace, and then proceeds to another at some distance, accompanied by all his chief officers, courtiers, and domestics. Fresh female establishments are invariably entertained at the new station; all conjugal affection is lost sight of, and these women being in time cast aside in neglect, as well as the forsaken wives, proceed in their turn to seduce the young men, and thus profligacy reigns paramount among all classes of society. There are

indeed few couples who live any time together without violating the conjugal bed, the matter not being particularly regarded, and a beating being the only punishment inflicted upon the offending party.

36. Lost to all sense of shame, many of the libertine inhabitants keep their wives and concubines under the same roof, the favorite for the time being having all authority over the rest, who submit in the meekest manner without repining to the thralldom of the degrading situation. Nay, they even declare, that it is better to have some one to talk to, even though she be the supplanter of affection, than to remain solitary in a lone house by themselves; nor are these grovelling sentiments to be much wondered at, when we consider that the jewel, chastity, is here as pearls before swine, and that the utmost extent of reparation to be recovered in a court of justice for the most aggravated case of seduction is but five pennies sterling!

37. Morality is indeed at the very lowest ebb, for here there is neither custom nor inducement to be chaste, and beads, more precious than gold, bear down every barrier of restraint; honesty and modesty both yield to the force of temptation, and pride is seldom offended by living in a state of idle dependence on others. The soft savage requires but little inducement to follow the bent of her evil passions according to the dictates of unenlightened nature, and the rules of the loose society form no obstacle whatever to the entire gratification of her vicious desire.

38. Christian only in name, the nation is plunged in a filthy quagmire of bestial indulgence, and is stiff-necked and puffed up with the most inordinate self-pride. There is little chance of their benighted minds receiving voluntarily one single ray of good to enlighten their spiritual darkness. Founding every hope of salvation in the preservation of weary fasts, in the performance of vain ceremonies, and in the belief of ridiculous doctrines, they consider that faith in the true word is but an empty sound, and that kissing the stones of Jerusalem availeth rather than all the good works which can be compassed during a long lifetime.

39. Death closes the weary scene of barbarous licentiousness, and is met with the usual stoicism of the savage. On the demise being fully ascertained, the body is washed with warm water, and wrapped up in sundry cotton cloths according to the wealth of the family, the amulets and *mahtah* of the deceased are also immersed in liquid, and being

restored to the body, all are carefully enclosed within the folds of the cloth, and secured by several new cords; then commences the frantic shrieks of the women, and the cries of the female mourners, which are of the most melancholy and distressing description, the low moaning dirge of the old women being interrupted at intervals by the hysterical sob of the principal sufferer, who is bereft of all she held dear upon earth. For a time grief is most extravagantly indulged, the cloth is torn in shreds from the bosom, and the skin plentifully scarified from the temples, whilst the moaning and wailing continue, and group after group from the neighbouring houses pour in to add their voices to the dismal coronach, which swells on high from the death hut, and incite by their ejaculations, fresh bursts of lamentation from the survivors.

40. The corpse is then carried to the grave, which varies in depth from two to four feet, and is buried with the feet towards the East, that on the resurrection, the face may be towards the rising sun. A feast to the relatives concludes the ceremony, and the dirge of mourning gives place to the notes of the violin, harpers and fiddlers generally accompanying the funeral procession of all great men, and using their utmost endeavour to entertain the returning party by their liveliest airs. Should death occur during the night, the priests are instantly called to the scene, and by the blazing light of the torch prayers are chaunted until morning for the soul of the deceased; but on ordinary occasions, the body is carried to the cemetery half an hour after the departure of the breath.

41. A small quantity of *loban* is often deposited in the grave, together with the book called *sefufa zedick*, and the kings alone are honored with coffins manufactured of wood perforated with many apertures; these are placed on stone trestles amidst clouds of frankincense, and kept in this situation until the body becomes dried up, when the coffin is removed into the mausoleum, the walls of which are generally bedaubed with pictures, intended to represent the hunting and military actions of the royal occupant.

42. Priests alone possess the right of interment on the eastern side of the church, four paces from the porch. The aristocracy occupy the North, and warriors, women and children the South and West. All who die of *syphilis*, without confession or absolution, are either interred by the wayside, or in unconsecrated ground. Governors, men

of rank, and all wealthy commoners who have not, during life, worked in wood, iron or precious metals, are covered in the grave with the green branches of juniper; but smiths and artificers being looked upon as sorcerers, every care is taken to keep them under the ground when once deposited; great stones being heaped over the body, and the earth well secured and trampled afterwards under foot.

43. The funeral of an individual of reputed sanctity is attended by numbers of the priesthood with the great umbrellas of the Church, wherein the corpse is placed for a time, and surrounded by twelve lighted tapers betokening purity of life, which when nearly consumed are, lowered with the bier into the sepulchre. Ecclesiastics occasionally enjoy the privilege of a last resting place within the precincts of the sacred edifice; the pall consisting of a piece of printed Surat chintz is supported by six bearers, who wave it alternately with a fanning motion, whilst a numerous train of mourners follow amidst loud wails, with their hands clasped behind the neck, in token of the triumph obtained by death over sin.

44. During forty days, requiems are daily chaunted for the soul of the departed, and charity in proportion to the estate left, is distributed both on the day of interment and on several succeeding anniversaries. Oxen and sheep are freely slaughtered at the *tes-car*, or funeral feast, and all who choose to attend receive their portion in honor of the deceased.

45. Black or yellow garments, or ordinary dresses steeped in mire are worn indiscriminately as weeds—the period of mourning extending to one year; and on the death of a friend or relative, male or female, both sexes scarify the temples by removing a circular piece of skin, about the size of a sixpence from each, with the nail of the little finger, which is purposely suffered to grow like an eagle's talon. This custom, borrowed like many others from Judaism, is generally practised throughout the kingdom; scarcely an individual being free from the disfiguring scars, although in opposition to a royal interdiction, which was proclaimed throughout Shoa, in consequence of an ecclesiastical remonstrance to the throne, representing the custom to be in direct violation of the written law: "Thou shalt not cut thy face for the sake of the dead."

46. Although three military expeditions are undertaken every year, the nation is by no means either a martial or a chivalrous one. Few

individuals are pointed out as being possessed of even common bravery, and the high honor and esteem in which they are held, evince the absence of this virtue among the rest. The principle of bullying the weaker party may be distinctly traced in every form and relation of life, and much of the mean subserviency and respect of the inferior may be justly attributed to the well-known consequences of arousing the dread anger of the superior.

47. Their system of war is entirely predatory, and consists of successively overwhelming with immense masses of men solitary tribes in the vicinity, taking the unsuspecting foe by surprise; massacring all the males of the family; sweeping off into captivity the maids, widows and cattle; and utterly burning and devastating fields, houses, and farm stock: but there is seldom any fighting; the unfortunate Galla is taken completely unaware; those who have swift horses at hand make their escape to their hiding places, and the unlucky remnant are shot down, speared and emasculated without mercy: a few only offering any resistance to the numbers who surround the devoted band.

48. A very different scene, however, presents itself when timely intimation is carried to the tribes of the destination of the locust army of the Amhara; the women and cattle are sent to the fastnesses, and the men assemble mounted on their light, active and well broken steeds. The invaders halt at the sight, for the courage of the Amhara is not sufficient to carry him into fair fight with an armed foe, and after a little skirmishing at a distance, the intruding numbers retire before the few, until some more favorable opportunity occurs of dealing the death-blow in the dark.

49. But the Gallas, from their better acquaintance with the localities of the country, oftentimes make the invader pay dearly for the spoil, and more especially when entangled in a morass these wild riders charge splashing through the swamp at full speed, and cut the bewildered Amhara to pieces. Whilst returning from a late successful surprise, His Majesty had the deep mortification on coming up with the plunder and rear division, to find his advanced guard nearly annihilated, and the bodies of 800 of his most distinguished warriors lying trampled in the mud as a bloody memento of the successful rush of the Pagans, who were lining the tops of the surrounding hills in utter derision of his remaining force. Many of the Galla tribes, also of the Loomi,

the Aroosi and the Ittoo, still hold their own, and have by repeated defeats, taught the Amhara to beware of the close conflict.

50. The spear, the sword, and the buckler, are the national weapons, although the use of fire-arms is partially known and fully appreciated, and the king's company of fusileers is gradually increasing in number, to his own advantage, and to the consternation of his enemies; but the habitual suspicions of the monarch prevents the native from being made thoroughly acquainted with the use of the firelock, the arms being always deposited within the walls of the palace, excepting during the actual period of the expedition, and ill-judged parsimony works its usual baneful effects on the minds of the hired soldier.

51. Combining the halberd with the javelin, the spear is used both for thrusting and throwing, loaded at the butt with a stout ring of iron; it is short, light, with a keen long iron head, and well balanced, but better adapted for launching as a missive weapon. The Abyssinian, from constant practice, is well versed in its use, and after poising it for a time over his head, displays considerable accuracy of aim at any distance within sixty yards of the mark.

52. It may be generally said, that swords of civilized nations are straight, whilst those of barbarous people are curved. The Abyssinian implement, which is frequently represented in old Egyptian paintings, is very short, hardly two feet in length, very highly recurved, and fashioned out of very bad metal indeed; altogether it is a most ridiculous weapon of war, and would prove of but small service, if opposed to any of the modern inventions. After the fashion of the ancient Persians and Romans, it is worn on the right side, and is more like a short reaping sickle with the back sharpened than a sword; it is chiefly employed after the spear has finished the work of death, to complete the work of mutilation of the body.

53. The terrible effect which attended these weapons in ancient times is not to be witnessed among the dastard sons of Shoa. "The horseman indeed lifteth up both the bright sword and the glittering spear," but "there is no multitude slain," and if beat into ploughshares and pruning hooks, the metal would prove of much greater service to the nation in their agricultural pursuits, and of equal avail in braining a defenceless Galla, their only enemies acquainted with the art of war.

54. The buckler, resembling the Roman clypeus is made of a good tough bull's hide, or cut from the hardened skin of the wild buffaloe ; it is of large dimensions and well studded with silver and brass crosses and ornaments, and being conveniently portable, can be turned with the greatest ease to ward off the threatened blow of the coming missile. Anointed and rubbed with oil, as a preservative against cracking and injury from the weather, this defensive armour is generally stowed in a cotton bag, and on the return of a triumphant army, is frequently presented as a votive offering, and hung on the vestibule of a church. When not worn on the arm, it depends from the high pommel of the saddle, and "the bull skin border of the bossy shield" protects the leg from all the crushing and kicking, invariably experienced in the disorderly array of the Amhara rabble.

55. The troops move in masses under their respective governors and leaders, and take any direction they choose, provided they do not interfere with His Majesty's particular route, or go before the state umbrellas. The king's concubines and women follow on mules immediately behind their lord and master, and a band of 30 bearers of the royal silver shields preserve the faint line in front of the confused mass of succeeding horsemen, who are kept from intruding too near the sacred person of Majesty, by the strenuous efforts of the master of the horse and his assistants, who lay about lustily with their ratans, without much regard to rank or station.

56. The striking of the royal suite of tents, which is pitched enclosed in a compound of black woollen walls, is the signal for packing up, and at the beat of the drum and the sound of the horn, the king, bare-headed as Masinissa of old, issues forth about 9 o'clock, when the mass follow in his route. On His Majesty's dismounting to proceed on foot across the meadows, all follow his example ; the march is seldom very lengthy, and the household ladies' alighting from their mules is the signal for the halt ; a general rush at speed takes place from all directions of the host, for the purpose of securing a good grassy spot for the bivouac, and fierce wrangling, and often times quarrels and bloodshed ensue, before the array is quietly located for the night. None have tents except the king and a few of his great governors, and like the black woollen awnings of Kedar, they are warm and of a close texture, and are kept firmly erect by loops fixed to hooked wooden pegs.

57. His Majesty is welcomed to the capital by a strain of triumphant music from every throat in the army, whilst all the successful warriors decked out in their gayest attire, and vaunting trophies dangling beneath gauntlets and bracelets of silver, careering in front, slowly progress before the royal person in a mazy labyrinth of reticulated circles. The air is rent with shrill whoops and yells, which are answered by the thrilling welcome of the women pealing from the palace and every part of the town, whilst the thundering war song is shouted from the dense phalanx closing the procession.

The priests receive their royal master with a blessing, and the unceasing clang of big drums, together with frequent discharges of musketry and artillery, fill up the pageant.

58. From the most remote ages, the glittering bracerlet has been always the badge of bravery. The Amalekite, who slew the warrior Saul, took the bracerlet that was upon his arm and brought it to David. In some parts of the East they are still used in the investiture of gallant chiefs; and the celebrated armlet of Persia surmounted by the great diamond "the crown of the moon," is not more valued by its royal possessor, than the ring of brass which encircles the wrist of the Amhara. The gauntlet, the spoils of the lion, the armlet and the *aqua-dama*, each advance the warrior in the scale of honor and credit, and when the matted locks are crowned by the white feather of the Hirkom, or the green sprig of wild asparagus, the most frightful tales of blood proceed in streams from the mouth, and there is no deed sufficiently daring for the prowess of the braggart. But it is well known, that many are ornamented who have never proved themselves in the field, even according to their own base ideas of fight. The lie is brought to the rescue of the coward reputation, and the emblems of bravery are often exhibited, on spilling the blood of the most inferior vermin; but blood is the sacrifice demanded, and it matters little whether it be poured from the veins of the Christian or the Galla, from the elephant or from the mouse; the war song is shouted on every available opportunity, even on the accidental destruction of a rat, and all would fain appear martial and chivalrous, glorying in the name of the "bravest of the brave."

59. The principal materials employed in the most ancient crowns and chaplets were wreaths of flowers and leaves, which were afterwards

substituted by imitations in metals. The idea of the *aqua-dama* might have been taken from the tendrils of a creeper hanging in clusters from a massive branch of the Weira tree, and the ornament is certainly deserving of much praise for its singular beauty and fanciful form. A transverse bar of worked silver worn across the brow over a thick row of ornamented pendants reaching to the eyes, and branches of light chains depending at intervals completely round the head, fall in a glittering mass to the waist, whilst a worked coronet rises high above the bar, and is profusely cut into open figures and highly wrought crosses.

60. The gauntlet is generally made of silver, and reaches from the wrist to the elbow, and the armlet is an unmeaning hollow ring of silver, resembling in size and clumsiness rather a manacle to secure a wild colt, than an ornament for a Christian man.

61. The travelling equipment of a man of rank is very simple indeed, and a few attendants or a sumpter mule suffice to carry all requisites for the journey. His wants are but few—a loaf of bread and a horn of mead for his sustenance, and a skin for his bedding; the cotton robe serves him for covering by day and by night, and he can always find some shelter at the end of the march, which is little inferior to what he had been accustomed at home.

62. Ambling along upon his mule gaily bedecked with bells and brass ornaments, with a running footman on each side, he takes the road early in the morning, followed by a party of retainers according to his means. Immediately behind his person, the confidential shield-bearer takes precedence, his steward rides nearly abreast to hold a share in the conversation, and the remainder of the train, some with load and on foot, but all armed with sword and spear follow, as they choose, a noisy motley group, without order or regularity. They are, however, attached to their master from long service and kind treatment, and in many ordinary transactions swear by his name, instead of that of the ruling monarch.

63. A stage of 25 or 32 miles is considered long, and indeed the high hills to be ascended, and deep valleys to be crossed, render it wearisome to traverse even that distance; the general pace is the common step of the mule, about 3 miles an hour, but when the road is level, the amble is increased to 5, and those on foot are accustomed to keep up with the mounted party. A saddled horse is often led in the train, a custom

handed down from the former generation, when the country was not in such a settled state as it is at present, and when the traveller was obliged to keep a weary and vigilant look out for parties of roving Galla, and to give battle on the moment, if the occasion required; but Sabila Salassie has wonderfully improved matters during his long reign, and now, if provided with the necessary royal permission, an unarmed man can pass through any part of the hereditary dominions of Shoa, without scath to limb or property.

64. As the king's guest, the traveller is in general treated with some degree of respect, which is, however, entirely owing to the despot's wishes, and the fear of consequences unbars the door of the house and throws open the stores for the consumption of man and beast; but a churlish reception would most probably await the unfortunate who travelled through the country without the king's permission; and a well-stocked purse, or a well-filled portmanteau, would not invariably produce a salutary effect, as the savage has always some plan or idea in abeyance, to obtain any curious article exposed to his admiring view, without the necessity of imparting aught of value in exchange. Under every advantage, and attended by the king's household officers, it is extremely difficult at times to obtain the most simple and necessary supplies, and force is frequently resorted to, to extract these articles for which the most liberal payment has been tendered beforehand; but there always exists along with the desire to acquire property, an innate dislike to part with aught the most trifling, and even among the higher classes, the small request of a stick or a spear is peremptorily refused to parties, who have heretofore loaded the ingrate with the richest imaginable presents.

65. A great man on coming to the capital if unprovided with a house of his own, is certain to find ready accommodation always with the inmates of any of the lower description of dwellings, who are all willing, for a trifling consideration, to remove their bullock hides, and allow the grand visitor the free use of the apartment, such as it is. They will also cook the victuals of the stranger and his followers, if of the same religious persuasion as themselves, and remain content with a very small remuneration indeed.

66. His Majesty, however, in general, has tents pitched for all great men, and liberally supplies them with food, both at his own table and in

the presentation of the '*Dingo*,' an established allowance granted from the royal kitchen, bread, mead and pepper, soup daily, and sheep and bullocks being occasionally distributed to upwards of a thousand people, who are on the list as masters of *Dingo*. Every stranger who comes to the kingdom is amply provided for, and indeed all who make their necessities or their wishes known on the subject, have no reason whatever to complain of any want of liberality on the part of the sovereign of Shoa.

67. From the excess of cultivation on the table land, there are few wild animals, except hyenas, hares and field rats; the death of an otter is considered a rare feat of prowess, and badgers are avoided as the 'devil's sheep,' and the few that burrow in the hills are viewed with very great distrust. Partridges and guinea fowl are hunted down with dogs placed on successive ranges, who, fresh from the nearest station, pursue the quarry the moment he finishes his fight, and very soon pick up the wearied bird. In the low country, the larger animals, elephants, lions, buffaloes, rhinoceros and many species of antelope exist in considerable numbers, and as each has a relative value in the scale of honor reckoned according to Galla heads, the brave warriors on the frontier do contrive, at lengthy intervals between, to compass the death of some.

68. A large body, consisting of several hundreds proceed on horseback to the cover, armed with every available weapon, and worry the animal to death according to the usual approved system of Abyssinian bullying, riding after him till he is brought to bay, and pouring showers of bullets and lances from a distance into his carcase on the first convenient opportunity; but these hunts are often undertaken without success, and seldom conclude without many fatal accidents. The valiant thrower of the first spear is entitled to the honorary reward from the king at the triumph at entry into the capital, which is attended by the same ceremonies and rejoicings as the advent of a successful military expedition against the heathen Galla. The elephant is reckoned equal to 40 Galla, the lion to 7, and all the other large animals to 5 Galla, killed in battle.

69. A good equestrian, and a tolerable marksman, His Majesty is in the habit of making Saturday excursions attended by many hundred followers to some favourite retreat, where he remains for hours, shooting what the country chiefly affords, *i. e.* baboons, vultures and wild ducks;

but the Amhara has altogether a very indistinct idea of woodcraft. One of the chiefs burning with the desire to emulate the white men in the distinction of an elephant, lately proceeded to the jungles with a retinue of 1000 adherents, and a large party of the king's gun-men ; but after fruitlessly spending a month in the covers, he was fain to return without having destroyed any thing of larger dimensions than a spotted monkey. Hyenas are suffered to multiply to a great extent in some parts of the country, owing to the superstition of the natives, who firmly believe that Jewish sorcerers descend from the mountains during the night, and transform themselves into the likeness of these foul animals, and that in consequence, there would be no good result in the pursuit.

70. The bulk of the nation is indeed decidedly agricultural, although it appears somewhat strange that the minds of the people are not more disturbed and upset by the continual military expeditions they are forced to make against the Galla. Probably the selfishness of the despot in appropriating the lion's share of the spoil has most salutary effect in checking innate restlessness, and the Abyssinian is taught in a rough school to understand fully, that there is more profit to be obtained from holding the plough than from wielding the sword, and it is certainly the fact, that when the foray is over, the war horse is turned loose in the meadow, and the partisan willingly applies himself, according to his means, as usual, to his peaceful avocations among the fields.

71. Mounting on the left side with the assistance of their spear, the natives when seated do not by any means ride well, though they do not very often tumble from their horses or mules, owing to the high fortifications of wood and leather which are built upon the saddle to protect the rider in front and rear ; and although they can carry a horse at speed over bad ground, their seat is awkward and ungainly, and they have no idea whatever of easing an animal in his distress. Bitted in the most cruel and barbarous manner, they bear as heavy as lead upon the bridle rein, and no horse is ever five minutes in the hands of an Amhara without having his mouth pulled to pieces, and the blood streaming as the tortured animal tosses his head in the air for relief.

72. The sojourner in Abyssinia can easily believe what Bruce relates concerning his recorded instance of cruelty to animals, for although it is not fair to brand the nation with a foul stigma resting on a solitary fact, yet there is no good reason to disbelieve the veracity of the traveller ;

and other facts have been witnessed which exceed in horror even what has been related of the soldiers of Northern Abyssinia. On the first military expedition to which the British Embassy was invited, on the evening of the successful foray, the limb of a sheep was most wantonly severed from the live animal with a sword when the wretched beast refused to proceed further, and the mutilated trunk left bleeding upon the ground, to be hacked piece-meal alive by any in the rear of the column of savages who had no store of provender. That the flesh might have been served up quivering with the life-blood is also extremely probable, though it might not necessarily have been taken from the living beast, for the animal is invariably killed at the very door of the eating house, and it takes but a short time after the breath is out of the carcase to hand up the raw meat to the feast. Whatever might have been the custom 80 years ago, now-a-days, the animal is invariably in the first instance killed after a fashion. •

73. A rush of 10 or 12 men is made on the victim, his legs and horns are seized as a purchase, he is thrown upon the ground, when the throat is hacked through with a blunt knife in the name of the Holy Trinity, and the poor beast is left to struggle and stagger about until the lifeblood be expended; then commences an indiscriminate onslaught of knives, swords and hatchets, without the preliminary operations of skinning and cleansing. Bigotted to a degree, the animal if killed by the hand of a Moslem is considered in the highest degree impure, and reckoned on the list of even lower esteem than the unhallowed flesh of pigs and bears, geese, and wild fowl.

74. The Abyssinian in general is too well acquainted with the value of his own live-stock to urge him beyond his powers unmercifully, and often performs a great portion of the journey on foot rather than distress the animal to his own loss; but his treatment of Galla prisoners, and the almost certain dreadful fate which awaits any old or useless male who falls into his hands, is a sufficient blot upon the Christian name, without the addition of any other crime whatever.

75. Here, as elsewhere, eating is one of the most important concerns of life, and on the days of the great festivals, the palace displays all the pomp remaining in the land, and the unusual sight of the population somewhat aroused from their customary state of lethargic bestiality; the stair cases are lined with groups of priests and monks in their holiday

suits, and the courts are filled to overflowing with the chiefs and nobles, who on these gala days cast aside their abhorrence for the use of water, and appear dressed in clean white robes.

76. The king reclines in state on his best velvet cushions, and the royal alcove is tricked out with gay gold cloths and massive silver ornaments; seated on the ground immediately before the presence, are his most devoted and valiant governors, and around his couch swarm a group of young pages, the tableau being most probably taken from the Old Scripture pictures, where cherubs are so profusely introduced surrounding the principal figure. A long line of attendants stretching on either side of the throne stand as fixtures against the walls, each bearing in his right hand a straight silver sheathed falchion. The room is of large dimensions, and the height and gloomy ceiling in some degree compensate for the absence of architectural decorations, whilst the lofty walls are relieved by a display of all the state shields, which are profusely studded with silver bosses, crosses, and ornaments, and depending from each buckler the velvet mantle droops gracefully by its side, glittering in every hue and color of the rainbow.

77. At an early hour, a horse-shoe table is extended the entire length of the dwelling, and is so entirely heaped with viands, that not a twig of the wicker work is visible beneath the load. Piles of wheaten cakes touching each other, and strewed with fragments of fowls, tower up two feet above the surface. Bowls of rich curry, decoctions of red pepper, flanked by bottles of old hydromel, heap the groaning board, and numerous slaves are ranged at intervals with large baskets of delicate raw flesh, which has been just stripped from the slaughtered bullock.

78. The preparations for the feast are completed by 8 o'clock in the morning, when the great doors are thrown open, and a burst of wild music from the king's band ushers in the company; four hundred sit down on the floor at a time, ranged in double row besides the table, the chief men in the front rank, and every justice is done to His Majesty's hospitality. The piles soon sink beneath the active attacks of the guests, and the rising hum proclaims that the hydromel is of the most potent quality. Numerous attendants are in waiting to administer to the wants of the honored guests, by handing with their fingers from the viands whatever is desired, and a piece of meat if not relished by the first person into whose hand it falls, is passed to the next inferior,

and thus runs its course down to the individual, whose rank incapacitates him from rejecting the proffered morsel.

79. During the repast, the fiddlers and harpers who are stationed in the opening of the horse-shoe, dance and sing to the notes of their instruments, and ever and anon the shrill notes of some "Asmaree" stationed in a corner of the hall, rise thundering to the very roof, in acclamation of the generosity, hospitality, and magnificence of the great emperor of the Amhara.

80. After the guests are fully satisfied with food, the company rise, and each being provided with a large horn of mead, lounges against the walls to complete the inebriation which has been but partially effected at the table, whilst crowds of well dressed female slaves speedily replenish the diminished structures of food and liquor.

81. The great doors are again thrown open, and a fresh set enter amidst the increasing din, and the entertainment is continued till late in the afternoon; etiquette enforcing on these occasions the presence of the monarch throughout the entire time. Hundreds of bullocks are devoured, together with many more measures of wheat than can be well conceived; but altogether considerable decorum is preserved, and although the guests reach a maudlin state of drunkenness, yet the presence of the king is generally respected, and the exuberance of incited mirth expends itself in harmless praises of the royal host.

82. Such, however, is not the case at private parties, the curb of restraint is allowed to fall loose, the fierce passions gain along with the liquor the entire ascendancy, and guests seldom return to their homes, without witnessing the broil and the scuffle, the flashing of the swords, and the dealing of deep cuts and wounds among the drunken combatants.

83. Sunday is the great day for feasting, and is universally believed to have been designed for the express purpose of eating and stuffing. Men do not labour in the fields, women abstain from grinding and sewing cloths; and although other work is carried on as on ordinary week days, the chief employment for all who can afford it, is to pass the entire time in eating, drinking, and sleeping.

84. The influence of the evil eye is supposed to have little or no avail within the palace walls, and the great door is suffered to remain open during the operation of eating; but elsewhere it is scrupulously

barred and closed, and a fire is invariably lighted before the peasant, who will on no account appease his hunger, labouring under the strange superstition, that otherwise the devils would enter during the dark, and that there would be no blessing upon the meat.

85. It has been conjectured by Pliny, that the orientals received their first hints of building from the swallow, and that in imitation of their feathered instructor, their first attempts were made in clay. Where the Abyssinians obtained their ideas on this subject it were hard to tell, but certainly they have made little progress in architectural design, and their houses, constructed as in the earliest day, are still mere frame-works, sparingly daubed over with a thin coat of mud. Here thieves can easily break through and steal, and the materials are of such a flimsy nature, that the morning sun oftentime rises a witness to the truth of the scriptural metaphor: "He built his house upon the sand, and it was swept away by the rising flood."

86. Of the rudest description, these hovels are composed of mud and rotten twigs, and perfectly pervious to the inclemencies of the season, they subject the occupants, from the cold damp air, to all the pains of rheumatism and catarrh. There are no conveniences in the shape of glass or other transparent substances, and if the door be closed on the dense unhealthy fog and the cold bleak wind, all possibility is denied of admitting light; the thermometer rarely rises above 65 degrees, indicating the necessity for artificial heat, whilst there exists no vent for the smoke, excepting through the door and the cracked apertures in the walls.

87. In the town, from the want of sewers and drains, the inhabitants are obliged to live like swine in the filth of their own styes, inhaling all the effluvia of decomposing matter and putrifying water; the comfort of space is never consulted, passages and out-houses are far beyond the intention of the proprietor, and with doors allowing full ingress to injurious currents of air, with roofs admitting the rain, and floors covered with unwholesome damp, it is surprising that many more of the inhabitants are not made martyrs to disease. Some few years ago, epidemic dysentery made its appearance at Ankobar, and as might have been expected, rioted to excess in the foul location. One-half of the population was swept away, and the remnant fled for a time from the hill, which they declared to be blasted by a curse from heaven.

88. In the country, there is no attention whatever paid to cleanliness or comfort. The stagnant dunghill is carried by the descending rain but a few yards from the walls, and the cattle and poultry are allowed to share the general apartment ; misery and confinement are strikingly portrayed in the worn-out thatch and the wattle stockade which surrounds the farm steading, whilst the inmates themselves, although supplied with an ample sufficiency to sustain the mere necessities of life, exist amid dirt and vermin, without experiencing much comfort even in the moments of their very highest enjoyment.

89. It is the practice of this uncivilized country to keep the demise of royalty a profound secret so long as possible, in order to avert the anarchy and confusion that would not fail to occur during an interregnum, when every individual in the kingdom considers himself at full liberty to act according to the best of his imagination, without fear of punishment. Whilst there is no king there is no law, is the maxim in Shoa, and the foulest crimes are committed with the most perfect impunity. On the news of the death of Assfawoosun, the streets of Debra Sibanoo ran red with blood, and 800 victims were immolated to private malice and revenge, before the appointment of his successor was proclaimed, and justice and order re-established on their seats.

90. At other times also, the great Christian maxim is too apt to be forgotten. The Abyssinian remembers only that he is savage, and revenge, as usual, takes up the first position in the mind. Many a dark deed has been cowardly enacted in the deep forest or in the confused skirmish, and the Gallas have been oftentimes most wrongfully accused of foul murder and death, when the victim has fallen under the assassin spear of his false comrade ; and indeed the rulers and leaders of armies are on this account always much disinclined to lead their forces through difficult woods and defiles, being well aware of the dread effects of Amhara treachery.

91. It is deeply to be lamented, that any nation whatever should esteem even the heads of the slain as the great emblem of victory, but the more atrocious and disgusting barbarity of Abyssinia, the base idea of which is so revolting to humanity, is the filthiest ceremony that ever disgraced any styling themselves a nation. The frailty of human nature is indeed discernable in the most legible characters, and he who witnessed the unhallowed proceeding cannot fail to offer up a fervent wish,

that the time may be hastened when nations shall be knit together in the bonds of love, and when true Christianity shall reign triumphant in every heart.

92. On the close of the foray, each follower who has slain a male creature ;—*murdered* would be the proper expression, for the grey hairs of venerable age and the tottering step of smiling infancy prove no safeguard to the ruffian monster ;—proceeds to mutilate the body, and carries off the token of his crime carefully preserved in the bloody folds of his waist cloth. The disgusting trophy after being prepared over the fire is hung dangling to the right wrist, and on the following day, each in his turn presents himself before the approving monarch, who halts at intervals at the time of march for the purpose of witnessing the foul exhibition. Group after group, dash in from the flocks, resounding their war song in chorus, and whilst brandishing their spears and their vile trophies, the lying murderers shout their prowess aloud :—“ I have destroyed my enemy in the open plain, I have rushed upon the foe, and slain him in the wood. I am the king’s great soldier, may Sabela Selassie live for ever.” After the savage Christian has fully displayed his wanton cruelty he sinks prostrate to the ground, and by his mean grovelling subserviency, fills up the full measure of Abyssinian iniquity.*

93. All proclamations are made after beat of drum by the king’s heralds on the outside of the palace gateway, the removals and appointments of governors, the promulgation of religious doctrines, and His Majesty’s commands on all general subjects ; but the order of assemblage for the military expeditions issues forth in pithy language from below a small stunted tree at the foot of the palace hill of Angollala.

94. “ The king hath foes and is about to subdue them on a certain day, who fails to present himself at Zallo, armed and carrying provisions for the specified time shall be treated as an enemy, and shall forfeit his property during a period of seven years.” The penalty, however seldom requires enforcement, all the Amhara respond to the call with the ut-

* This horrible custom if not borrowed from the Jews, is probably of Galla origin, and is early mentioned as being practised on the coast of Africa, vide De Bry, 1599, *De Caffrorum militio*. “ Victores, victis cæsis et captis pudenda excidunt quæ excisâta, regi in reliquorum procerum presentis offerunt.” This is a very ancient African custom. It is represented on the walls of the temples and tombs in Egypt. See the French Institute’s “ Description de L’Egypt.”—Eds.

most alacrity, for the insatiate love of blood and the inherent hatred of the heathen are sufficient inducements to quit home and family, and follow to the foray the great crimson umbrellas, in which they place the most unbounded confidence.

95. Every thing, however minute which is found by a subject, is carried straightway to His Majesty. The brass bowl of a pipe and a bottle of lunar caustic which were lost during the expedition were forthwith brought in by the finders, and restored. On his way to Angollala, a servant of the Reverend Mr. Kraff was swept away by the torrent in the Mosaliet river, and a tea kettle which he carried was lost; six months afterwards the utensil was found by a woman and taken to the king, who on being asked for it, said, "No, it will do for myself."

96. All presents received by the subject are also immediately carried to His Majesty for inspection, and it rarely happens that the individual is suffered to retain any part whatever. Brought before the sovereign as a peace-offering, the budget is generally received with an "*exogeer casto*," "God give you more," and forthwith transferred to the storehouse of finery which has been filling for ages. The more trivial portions of the present may be sometimes granted to the receiver as a wonderful mark of the monarch's favour; but in all cases, an equivalent in cattle or country cloths is afterwards made from the royal stores.

97. On the occasion of any loss by fire or other accidents, the begging sufferer makes the round of his acquaintance, who each contribute their mite to the subscription, and wonderful scope being given to imposition, the individual becomes more wealthy than before. Constant application is also made by the domestics of the royal household to obtain the price of destroyed articles, in order to save them from con-dign punishment. An offender was detected in bringing the same broken decanter three times over, and a shield was never said to have been broken or a mule lost, but the delinquent did not refer himself to the embassy for the amount of the fine.

98. Tainted with base servility, the Abyssinians pay the most abject respect to their superiors, and however aggrieved, are seldom heard to complain of the governor. The king is held in the highest adoration, and the oath by his life is the most binding in use. If adjured by this a person can be punished for non-compliance, and the wilful breaking the obligation renders the perjurers liable to severe penalties.

In addressing equals or children, the second person singular is used. Superiors are entitled to the third person plural, and disputes are easily excited, especially among the fanatic priesthood, by not paying sufficient attention to this point of etiquette. •

99. Respect is here paid by prostration to the earth, and after the most degrading and humiliating fashion, bowing the face among the very dust, by uncovering the robe, and exposing the naked person, and by kissing the nearest inanimate object on entering a house.

100. The most grovelling adoration is paid to the monarch, and to many of his chiefs. All of whatever rank when they approach the presence, throw themselves prostrate upon the ground, lie flat on their faces, and knock their heads three times upon the earth. The inhabitants bend in the mire at the approach of His Majesty, and the troops of horsemen as they emerge from their different districts to join the military expedition before mingling with the general mass, stream at full speed to the vicinity of the royal umbrellas, and pulling up at a prescribed distance, spring from their saddles, and all simultaneous leaders and followers perform the degrading prostration.

101. Every native uncovers his person when in presence of or in conversation with the king, whilst to equals the corner of the robe is only removed for a time, and then suffered to resume its fold over the shoulder. Inferiors are obliged to stand continually unclothed in the company of their masters, and any small present bestowed upon the servant, must be received with both hands in a cringing position, whilst the nearest object, generally the threshold of the door, is kissed in token of devoted love and affection. Suspicions of treachery and revenge may have possibly originated this strange custom of uncovering the person, and the concealment of dangerous weapons is totally debarred, when the law is enforced of making all strip themselves so often during the course of the twenty-four hours.

102. Although not particularly addicted to the merry mood in general, and exceedingly ignorant withal of any thing resembling stage effect, yet the palace buffoon elicits shouts of laughter by his uncouth antics, and attempts to personate the character of the adjoining tribes, who are looked down upon with the utmost sovereign contempt; and on the days of interview with these wilder savages, who come dancing into the presence chaunting their war songs, and decked out with feathers and

warlike implements, the buffoon mixes in the dance and delights the Amhara spectators by the performance of his caricatured gestures ; but in this department the country can only boast of the king's mimic, who retains his situation without fear of rivalry ; here there is no field for genius, and it would prove a hard task for the jester to devise any thing more ludicrous or ridiculous than the ungraceful dance of the Amhara, the impassioned caper of her priests, or the idiotic whirl of her warriors.

103. Following the custom of the dark ages, dwarfs are treated with considerable fear, respect and consideration, and many of the most learned and praiseworthy in the land are to be found among the small misshapen race. The king's father confessor is of the most diminutive size, though possessed of great good feeling, and forming a striking contrast to the generality of his nation. The chiefs and nobles often choose their secretaries and household priests with reference to their tiny appearance, and the wisest man in the capital, whose charms and talismans are considered all powerful, and who knows every plant by heart from the "cedar of Lebanon to the hyssop that creeps over the garden walls," sustains his character for lore, as much by the deformity of his appearance, as by the brilliancy of his understanding.

104. No petitioner ever enters the presence of his superiors unless furnished with an offering according to his means, as a bribe to propitiate favor and good-will. Cattle and honey, cloth, wood and money, and even stones being presented when building materials are scarce.

105. Presents are frequently exchanged among the chiefs and great men, and every display is attempted on the occasion, the train of bearers being lengthened out as much as possible by dividing the articles into the most minute portions, and all are covered with red cloth ; every thing must also be exposed to the view of the receiver, wild bulls and unruly he-goats, as large as donkeys, are dragged into the sitting apartment to the imminent danger and pollution of all around. Cocks and hens, loaves of half-baked bread, and pots of rancid butter, must be all closely investigated and personally approved of, and any deviation from this rule is certain to be visited with the most dire displeasure.

106. An easy and ingenious method of extortion exists in full force throughout the land, and all classes are equally amenable to its abuses

and privileges. Bringing any article whatever, the begging petitioner hands it over to his superior as a "*mamalecha*" or memento, for whatever he has the assurance to demand. Servants bring a stick or a bunch of grass, and ask for swords, clothes, and money; and chiefs and officers of the state present to His Majesty a pot of honey or a cotton cloth, and demand a horse or a mule, or an embroidered garment. If the *mamalecha* be received, the modest request must be acceded to, and indeed the custom of the country imperatively requires that the extortion should be invariably complied with.

107. With the first dawn, bands of petitioners station themselves on the top of the eminences adjacent to the palace, and the cry of "*aliet*," "*aliet*," "master," resounds deep in the still air of the morning; the door-keepers order them to draw nigh, but well aware of the understanding between these servants and the "four chairs," against whose decision they are appealing, they give no heed to the summons, but lift up their voices the louder, until the king orders one of his pages to cause the whole to assemble in the court-yard. At home and abroad, on excursions and military expeditions, the cry of "*aliet*" salutes the royal ear from the most strange and unexpected situations, and is in general, promptly attended to; the stick, however, is sometimes applied to the most importunate, who will not remain content with the promise of a future consideration of their claims, but every available opportunity is taken by the king of listening to these endless petitions and appeals. The halting stones, on the green turf are frequently transferred into seats of justice, judgment is given whilst ambling over the fields on private excursions, and three-quarters of the entire day, with the exception of the Sabbath, is devoted to unravelling the knotty points of controversy, or settling the disputes and quarrels of his subjects.

108. In Shoa, the men have the entire responsibility in all the bargains regarding cattle and sheep, farming and warlike implements; and the women barter in the minor articles of sustenance, grain and pepper, salt, ghee and earthenware. And although the man cannot carry the water or bake bread, he must wash the foul linen belonging to both sexes, an operation which is performed in the running stream, the clothes being deposited in a skin together with the seeds of the *indote*, and well trampled under foot. It is the province of the men to plough, sow and reap, split the wood, cut the grass, and repair the house;

whilst to the women all the other heavy work is accorded, as fetching wood, water and grass, making butter and bread, spinning, pounding and grinding. Markets are held once a week in various parts of the kingdom, and the weekly supply for household use is then laid in. Men and women indiscriminately attend, each occupied by their own peculiar duties; at other times in all the towns and villages of Abyssinia, there being neither open shop or bazar, the Owenian system of barter entirely prevails, and the proprietor of any article who wishes an exchange perambulates the streets, calling aloud from door to door the nature of his goods, until he finds some individual willing to make the desired barter.

109. Love rules neither camp nor grove in Abyssinia, but base sensuality is indulged in by the grossest indiscriminate intercourse. A permanent female is sought for as a household drudge, the child is delivered over into bondage without any reference to her own wishes, and remains with her mate only until she can better her miserable condition elsewhere.

Women of rank, however, and more especially those of royal blood, assume high grounds and pretensions, for the honor has been conferred by linking with the lot of the subject; the reins of authority are generally taken violent possession of, the order and the command issue in the name of the lady, and the hen-pecked husband on whom the alliance has been thrust, is obliged in his own establishment, to endure in peace all the despotism of the palace.

110. In all matters of quarrel and dissension, should either of the parties desire to be reconciled, the matter cannot be adjusted without the intervention of a mediator; a third individual is sought for, who will undertake the arrangement, and in his hands the affair is entirely placed. The king himself often accepts the office, and of course is rarely unsuccessful in his applications. Inferiors come into the presence of their offended masters with large stones upon their heads, and prostrate themselves upon the earth in token of their fault, which, however, is generally forgiven on the intercession of the mediator. Quarrels between man and wife, if not allayed with the cudgel, or of that serious nature to cause separation, are settled by arbitration; the neighbours assemble to discuss the matter, a judge is instituted for the occasion, the parties are mutually examined, and a fine is imposed according to the

merits of the case : a string of beads, if the husband be in fault, and a pair of new breeches should the lady be found napping. A woman supposed to be unfaithful to the conjugal, "*alga*," may be returned to her friends with a portion of her property, but one caught in the act of infidelity can be well beaten, and ejected stark naked from the house ; these extremities are seldom indulged in, and mutual forbearance seems to reign paramount in Shoa.

111. But this universal loose style of living exercises a most baneful influence on society in general ; the mind becomes degraded, whilst the body is enervated by disease and indulgence ; jealousy is rife in every house, and the children of each separate female on the establishment are bandied against each other in all hatred and animosity, which is by no means allayed on the death of the parent, or by the posthumous intimation of his partial and unfair distribution of property.

112. On all occasions of rejoicing and ceremony, whether on the successful return of the king or of a private individual, on the sight of a procession or on the discharge of fire arms, the women with their characteristic love of noise, burst out into the most thrilling clamour of welcome. Moving their tongue with more than ordinary volubility against the roof of the mouth, they produce continuous successions of shrill notes, which are more agreeable to the listener than to the performer. One watchful dame on the outskirts perceives the approaching cavalcade, and forthwith gives out the clamorous note of warning ; in a moment the entire mountain side is covered with every female in the location, yelling in full chorus ; the *hillil—lil* progresses fast and furious, as they bend their bodies nearly double to assist in up-raising the melody of the tone, the tears stream from their eyes in the violence of the exertion, and the hills resound far and near with the gathered volume of the shrill notes.

113. One of the strangest of Shoan customs is the method of salutation ; the most earnest enquiries being invariably made regarding your own health and that of your house, horse and children, as if the enquiring party was really interested in the result. Even two old women tottering on the very brink of the grave, and afflicted with every pain and sorrow under the sun, meeting in the street, pull up and commence a string of good wishes, which are reiterated as long as the breath will come out of their old bodies. How are you ? How have you passed

your time ? Are you well ? Are you very well ? Are you perfectly well together with a thousand other pert interrogatives to be made acquainted with their private condition, and at each response the Deity must be invoked as to the great happiness and perfect felicity which have been experienced since last sight. Should the meeting take place twenty times a day the same ceremony is enforced, and for each progressive state of morning, noon and eve, there exists a distinct set of phrases, which from their continual repetition sound grating upon the senses. Passengers stand in the streets and roar out salutations intended for the inmates and huts a hundred yards from the hedge. You are startled from your sleep by a dunning—How are you ? from some gentleman passing before day dawn to his country residence, and your ears are afflicted from morning sun till evening, by a most teasing and harassing string of enquiry, from every one who passes himself off as an acquaintance.

114. The *buldurba*, or introducer, is appointed from amongst the retinue of every one who keeps an establishment, on the first introduction of the parties. To him, and to him alone can the visitor look for admittance into the house, and unless he is present, the monarch and the great man are alike invisible. Court-yards may be thronged with many attendants, and doors may seem invitingly accessible ; but the “open sesame” is wanting, and the stranger returns to his own abode disgusted with the insolence as well as inconvenience of the custom. Time, however, softens down the rigidity of the practice, which is at first so pertinaciously observed ; suspicion of evil intention gives way, on better acquaintance of character, and after a certain probation. There is much more difficulty experienced in gaining admittance into the lordly Abyssinian hut than into the lordly halls of an English nobleman.

115. Suspicion may also be easily traced in the custom of all great people moving from their domiciles with a long train of armed attendants, as in the height of Highland anarchy. The tail of the McGregor was seldom of longer dimensions than that of an Abyssinian nobleman. Indeed he is never allowed to be by himself, whether in the cabinet or in the field he is invariably surrounded by a numerous band of mean sycophantish attendants. The custom of the country enjoins the practice, the cheap price of provisions enables him to feed a large population and the lack of all manufactories, supply an unlimited number of idlers, who are willing to obtain a livelihood in any manner whatever. But the

nuisance is a crying one to the stranger. No privacy is ever enjoyed. No retirement is ever suffered. A dozen naked savages are continually by your side, restrained by no very correct ideas of order or discipline; the confused hum and suppressed chattering are by no means of assistance in study or writing, and on the occurrence of meals or of the visits of illustrious people, the whole establishment tumble in naked to the waist to satisfy their own inordinate curiosity, and to do honor to their lord and master.

116. Visits are generally made early in the morning or before noon, and it is reckoned discreditable to enter a strange house after meals, as the object of the untimely advent can only be attributed to a desire of obtaining the food and refreshment of which the etiquette of the country enforces presentation. Sneezing is accompanied by an invocation to the Trinity, and the bye-standers are expected to exclaim "*moroo*," God bless you, and eating is invariably attended by a loud smacking of the lips, which can be heard at some considerable distance from the entertainment; none but beggars eat their food in a quiet and rational manner.

117. There is no sense of decorum evinced in the satisfying of any desire, however gross, and no shame whatever is felt in exposure to the gaze of the public. The toilet is unscrupulously performed in front of the assembled multitude, and his Majesty himself, the most polished gentleman in the kingdom, blows his nose with his fingers, and wipes the soiled hand upon the robe of the nearest courtiers, who eagerly proffer the cloth for his acceptance. More offensive than the Amaponda, who carries his own little cleansing spade tied round his neck, the first object is seized by an Abyssinian upon entering a strange house, and ears and nostrils are scraped out with the most savage indifference to appearance. All sleep stark naked, stretched upon bullock's hides, huddled close together for mutual warmth, each loving batch being covered with the accumulated pile of individual garment. Should the master of the house require food during the night, a piece of raw meat and a horn of beer are brought to him by a male or female attendant, who, destitute alike of clothes and decorum, stands unconscious of all shame until the craving of his hunger be satisfied; and owing to their foul feeding and their more uncleanly habit of never washing, cutaneous eruptions spread like a plague over their unsavoury persons, and few indeed are free from the disgusting diseases of the beggar.

118. Their amusements are few indeed. At rare intervals, shooting vultures and monkeys in the woods, or running down partridges among the hills with their dogs, throwing the spear on foot at a mark, or mimicking the art of war on horseback, moving in the uncouth dance, or singing the war-song in chorus, whilst the games of *gibbeta* and *shuntridge*, and the annual throwing the ball at Christmas, fill up the scanty list.

119. The spear is generally launched at a short distance, and the unsuccessful competitors are obliged to lay down with their faces upon the earth, whilst all the better marksmen trample and triumph over their prostrate necks; and in the "*yombeza*," the mounted warriors with blunt lances choose a spacious plain and perform at speed all their evolutions of war, attacking and defending, throwing the reed and receiving upon the shield, and whooping and yelling to proclaim the victory, the delivery of a sure spear thrust, or the hemming among their own number, one of the opposite band.

120. The "*gibbeta*" is a game somewhat resembling back gammon, but is played with sixty pewter balls, which are stored in 20 holes over the board; the distribution of these balls and the judicious heaping up of the stones according to certain complicated rules, constitute the science of the game, which is, however, sufficiently intricate to foster a spirit of betting and gambling, which reigns in full force amongst the nation.

121. *Shuntridge* is nearly the Arab game of chess, but the board and the men are very miserable productions of genius; a few of the moves are somewhat different, and the game is almost entirely confined to the court eunuchs, who bask their portly forms in the verandahs of the palace, and pass away their idle hours in very indifferent play.

122. On the Christmas, an annual contest takes place between the king's household followers, the dependents of the purveyor general, and the Deek Agavari. A cloth ball is struck with a mallet, and a struggle ensues for the possession of the missile; three times the ball is discharged over the plain, and the party are declared victors who have thrice caught it in succession. They enjoy the privilege for the day of abusing the vanquished, the king only excepted; every tongue being unloosed and the foulest abuse and slander being heaped upon the most illustrious as well as the holiest personages of the court. The day is

concluded by a grand entertainment to all, at the cost of the chiefs of the defeated party.

123. The king's band is composed of simple reeds of various length and sizes, the "*imbeta*," having in the upper part an aperture over which the mouth is placed, and the "*mihut*," which is fashioned somewhat after the form of a trumpet or trombone. Each performer has but one pipe, and consequently like the Russian, is master of but one note; there is no particular air or time attended to, each giving out his breathing very much as he chooses; but the wild music falls soft upon the ear like the harmonious sound of the Panden pipe blown over by the breeze.

124. The Abyssinian fiddle, the "*musuncho*," is of rude form and fashion; an empty gourd or a hollow square of wood being carved with a piece of parchment as a sounding board, and a bit of rough stick inserted in one corner to serve as the neck; there is but one string, and as the performer is not a Paganini, the inharmonious sounds proceed from the instrument as if the unhappy spirit of music was confined in the interior, and uttered harsh screams and moans as the bow proceeded to inflict fresh tortures upon her agonized sinews. Some continue to perpetrate a very faint resemblance to tune; but all consider themselves at perfect liberty to scrape away in the most persevering and soul-sorrowing fashion, and unlucky indeed is the site of residence if stationed near the proprietor of a *musuncho*.

125. The harp, called "*buggana*," is a most strange fabrication of wood, leather, and sheep's entrails, and presents an appearance as if an old leathern portmanteau had been taken by children as a foundation, and built up with the rudest materials to represent the lyre in the days of Tubal; nor do the notes belie the first appearance of the instrument, or bestow any credit whatever on the fashion. It has five strings, and is used only as an accompaniment to the voice, a simple monotonous cadence of the individual notes being the only music produced.

126. The large drum, called "*kubbers*," and the small one "*nagga-rect*," are not thumped so continually as might be expected, they are exclusively reserved for military expeditions, or for doing honor to the happy return of friends and relations from successful journeys, and it is indeed lucky for foreigners, that the nation with their present set of crude instruments is not infected with a musical mania. The silence of

night is seldom disturbed by the discordant sound of their barbarous attempts.

127. A portion of the vocal music is of a more pleasing description, and some of the airs which the women croon over their work are even soft and plaintive, There is, however, no great change of note in the strain, which has generally reference to the particular operation in which they are employed.

128. The recitative of the war songs is pitched in a high key, and chaunted by a single individual at the top of his pipe; and the thundering chorus, which consists of a few words in deep base, is at intervals poured from every throat in the party, with great effect. The return of a successful army is indeed a most striking pageant; the glitter of the silver ornaments, the flashing of gay cloths and housings, and the shrill chaunt of the fight, closely followed by the pealing bass of triumph echoing from ten thousand merciless throats, forming altogether the very embodying of savage exultation.

129. Their church music is most execrable; although seven long years are passed in its acquisition, and the constant practice of many hours during the day ought to make them somewhat more perfect. Howling and screaming, however, are the most appropriate terms to be employed for this ceremony, and the hoarse cracked voice of the priest, increasing in fury as he progresses in his task, is in true keeping with the jingle of the "*itsnassil*,"* the Abyssinian timbrel, which in its startling effect, can be compared to nought but the rattle of the poker upon the tongs.

130. From four in the morning until nine of the Sabbath, this clatter and ranting is continued for the *honor* of their religion in all the churches of the kingdom, besides a full muster of their croaking choristers on all their numerous holidays and festivals; and the band of stout priests who nightly mount guard to preserve His Majesty by their song from the influence of evil demons, have certainly chosen a cunning path to prevent the advent of, at least, all those spirits who are gifted with any musical taste.

* This is the "*sistrum*" which is thought to be included under the Hebrew term "*Titzzelem*," and is composed of a frame of sonorous metal crossed by bars of the same; these bars move freely in the holes through which they are passed, and when the instrument is shaken, the reverted ends striking upon the frame produce the clattering sound.

131. The attending dance of the priesthood is any thing but a relief to the picture ; the most uncouth attitudes and the most ungraceful positions are selected, whilst the beard and the crutch and the aged face are but in ill keeping with the mountebank jumps and capers performed upon the occasion. During the merry-makings in the palace and in the houses of the chiefs, the dance is also not distinguished by any less ludicrous effects, the votary seemingly enacting the part of a gander justly infuriated at the discordant sound of the music, shaking his wings and hissing in contempt of the fiddler's art, whilst he shuffles about in a crouching position, and makes sundry furious rushings and startings to possess himself of the obnoxious instrument.

132. The language of savages is generally highly metaphorical, and they are not satisfied unless action be embodied to the eye by color and character and form brought more vividly to the mind by the assistance of allegory, but this nation is equally unsuccessful in the personification of the spiritual, as in the abstract language of Theology.

The king and his chief singer form the only exceptions, the court language being sparingly sprinkled with a few flowery speeches, and the singer sometimes breaking out into crude allegorical sentences. " Why should the Father of song be restrained from dancing before the fathers of gold," he exclaimed when capering before the embassy on the steps of the palace, and the saying was responded to with shouts from the populace ; but the topics of discourse are always scanty among an uneducated race, and after the daily salutations are performed, nothing can be more rapidly stupid than the succeeding conversations of the native of Shoa.

133. Few but the priests and *deptras* can read or write, and many among those learned scribes are more indebted to the memory of their early youth, than to the page held in their hands for the forthcoming rant.

134. The ancient Ethiopic, which is also called Gees, remained the language of the empire only until the 14th century of our era, and in this idiom are written all the annals of her religion. It has now, however, fallen into disuse, and the people of Tigri alone retain one of its dialects. Amhara is generally spoken throughout the country.

135. The stores of literature being thus bound up in a dead letter, mistakes and false readings cannot be discovered in the low mumble of the officiating priest by the bystanders, who are alike ignorant of the text and the language; nor is the course of study of that extended or liberal nature to enlarge the mind of the neophyte. To know the Psalms of David by rote, together with the miracles of the Virgin Mary and Saint Tsela Huimandt, to elevate the voice into howling song, and to cut a caper into the air two feet above the surface of the earth, forming the envied accomplishments of the man of education.

136. Parchment is said to have been invented at Pergamos when the Egyptian monarch prohibited the exportation of papyrus. The Jews very early availed themselves of the Charta Pergamora to write their scriptures upon: the roll is still used in their synagogues, and was introduced into Abyssinia on the Hebrew emigration, where it still continues the only material in the country; but all the books extant are composed of many small leaves fastened one upon the other, enclosed between wooden boards, and carefully deposited in leathern sacks; many are embellished with glaring colored daubs, and all are looked upon with the eye of superstitious credulity.

137. The epistolary correspondence* is exceedingly laconic; the letters are folded up into small rolls, varying in size from one inch to four, and always enclosed in a coating of wax; there is neither signature nor superscription. The king possesses a signet seal, which is however seldom applied, as the names of all parties are introduced into the body of the note.

138. The pen is the reed, *kulum* of the East, without the slit, and the inkstand is the sharp end of a cow's horn, which is stuck in the ground as the scribe squats to his work; the ink is a foreign importation from the Somauli coast, and remains an intense black for ages, and the writer when he wishes to replenish his horn, inserts a few particles from his pocket, and adding a little liquid, produces a consistency similar in thickness to that used in printing.

* May this letter of queen Bezabesh come to my friend the English Ambassador.

Are you well? Are you quite well? Are you perfectly well?

That the soap may not end speedily, you will send it in large quantities, saith Bezabesh.

139. But the Abyssinian scribes do not hold the pen of a ready writer, and the dilatory management of their awkward instrument is attended with gestures and attitudes most distressingly ludicrous, clutching the tiny style like a hot apple in the paws of a hungry ape. It is carried with the most convulsive twitches, and seemingly by some supernatural force to the mouth of the writer, where the end is seized between the teeth and masticated, in a sort of mental phrenzy. During the whole period of this strange operation, the thin strip of dirty vellum is held at arms-length and viewed askance from every side, with looks of utter horror and dismay, and when at last the stick descends to dig its furrow upon the parchment, no terrified school-boy with the birch of the master hanging over his devoted head, ever took such pains in pointing the most elaborate pot-hook, as does the Abyssinian scribe in daubing his strange characters upon the scroll.

140. Like the Chinaman, each individual letter must be looked at from every point of view, before progressing to the next; every word must be read again and again by the delighted artist, and the greasy skin must be many times turned upside down by the grinning penman proud of his talents, to observe the happy effect of his handy-work.

141. During the intervals of approval, the destructive bites continue fast and fierce, to the utter demolition of the pencil; and long before the termination of the first sentence, European patience is apt to become utterly exhausted at the scene of awkward, foolish stupidity, and gross waste of valuable time. Seventeen years have been employed in transcribing a single manuscript, and a common epistle of five lines is the utmost extent of one entire day's exertion.

142. The following list gives the names of all the books at present in existence in Abyssinia. Tradition, however, records the titles of other works, which were deposited for safety in the islands in the Lake Zoo-ai, on the great invasion of Gragno, and which are said to exist with many other precious treasures of Ethiopia even unto this day.

1. All parts of the Old Testament, excepting the Pentateuch and the Books of the Maccabees.
2. The four Gospels with readings.
3. Chrysostom. Biography and Exposition of the Epistle to the Hebrews.
4. A dogmatical work of Cyril.

5. Genset. A book used in funeral solemnities, and ascribed to Athanasius.
6. Tethonegest. The code of Laws, said to have fallen from heaven.
7. Aclements.
8. Retuattaunanot. The Orthodox Faith.
9. Siena Aibud. History of the Jews in connection with the History of other ancient nations.
10. Mazopu. Extract from Ancient Philosophy.
11. Henosh. The Prophecies of Henosh.
12. Gadela Nudual. History of St. Michael.
13. Gadela zida Heimanot. Life of the Tecla Heimanot, the Saint.
14. Gadola Siena Markoo. Life of another Saint.
15. Gadela Gintra Maafao Kedus St. Zl.
16. Gadela Lalsbala. Life of a former emperor of Ethiopia.
17. Masgaba Haimanot. A dogmatical work.
18. Synodos. Canons of the Church, attributed to the Apostles.
19. Antiacos. Colloquy between Athanasius and a Nobleman called Antiakos.
20. Mazafa Mister. The principles of several Heretics of old.
21. Mazafa Dora.
22. Mazafa Timkal. Used in Christening.
23. Mazafa Actil. Used in blessing a Marriage.
24. Mazafa Keder. Used for instructing Renegades.
25. Gusbra Haimanot. Read during Passion Week.
26. Bartos.
27. Dionasios.
28. Teena Tetrak (Amharic.) Explanation of the Creation.
29. Tamera a Miriam. Miracles of the Holy Virgin.
30. Magara Miriam, Words of ditto ditto.
31. Godela Hawarjat. Lives of the Apostles,
32. Ardeet. Words said to have been spoken by Christ before his Ascension.
33. Kedasic. Liturgy of the Abyssinian Church.
34. Wuddassic Miriam. Praise to the Holy Virgin.
35. Arganon.
36. Gadela Samactal. Lives of the Martyrs.
37. Abushukur. Abyssinian Almanac.

38. Gadela Adam. History of Adam.
39. Kidan.
40. Egsiabher Neges.
41. Anda Negest. Book for Prognostication : forbidden in Shoa.
42. Sadela Medhanalim. Life of the Saviour.
43. Amida Mister (Amharic.) 'The Principal Doctrines of the Christian Church.
44. Temhest. Extracts.
45. Kufalik. Words spoken to Moses on Mount Sinai.
46. Mazafa Gragore (Amharic.) History of the invader Gragno.
47. Serata Breta. Christian Institutions of the Christian Church.
48. Mewaset. Hymns on Mournful occasions.
49. Zema Degna. Hymns sung during Fast times.
50. Degna, Hymns sung on other occasions.
51. Lifafa Zedik. A Book of absurd Contests, much esteemed, and buried along with the Corpse.
52. Ekabari. Book of Prayers.
53. Zelota Musa. Prayers of Moses against the influence of Evil Spirits.
54. Melka Michael. Prayers to St. Michael.
55. Melka Ijesus. Prayers to Jesus and the Holy Virgin.
56. Gadela Araga. Life of an Abyssinian Saint.
57. Gadela Kyros. Ditto ditto
58. Gadela Johani. Ditto ditto
59. Kotat of the 318 Fathers.
60. Maala Saalat. Prayers and Hymns for different hours of the day.
61. Wuddassie Amlac. Praise of God.
62. Mazafa Tornal. A letter which Christ is said to have written.
63. Surguamie Fidel (Amharic.)
64. Melka Gabriel. Prayers to St. Gabriel.
65. Swaso. Abyssinian Dictionary.
66. Germana. Prayers to frighten Evil Spirits.
67. Fans Manfasawi.
68. Dersana Sanbat. Life of a Saint.
69. Tekarie Ijesus. Christ's prophecy of the consummation of the World.

70. Mazafa Shekeneat.
71. Tecla Zeon.
72. Harmanot ab. Doctrines of the Abyssinian Church.
73. Gadela Antonino. Life of the Monk Antony.
74. Zelota Musadud. Prayers against Evil Spirits.
75. Dezsona Gabriel. History of St. Gabriel.
76. Gadela Georgio. Life of St. George.
77. Selota Monakosat. Prayers of the Monks.
78. Felekosus. Book of Monking.
79. Marishak. Book of Monkery.
80. Aragawi Manfasawi. Ditto ditto.
81. Dersana Mahajawi. Life of the Life-giver.
82. Gadela Sauncl.
83. Sjena Aban.
84. Gebin Negest.
85. Geea Moie.
86. Epiphanius.
87. Aximarius.
88. Buni.
89. Synkesar.
90. Mazafa Berhanet.
91. Lowros.
92. Deduskalea.
93. Tamera Ijesus,
94. Ankoritos.
95. Mazafa Ishai.
96. Teliksiny.
97. Mistera Samai.
98. Georgis Waloca Amid.
99. Dersana Miriam.
100. Lik Evangel.
101. Tarctch.
102. Gadela Ijob.
103. Thomas Koprianos.
104. Gadela Keduson.
105. Gadela Arsemaror.
106. Raia Miriam.

107. Gadela Abeb.

108. Gadela Makod Walale.

109. Gadela Guebru Christas.

110. Abicta Natrat.

143. Such is the accumulated literature of ages, and in the mass there are only four written in the language at present spoken and understood. His Majesty possesses a large assortment of manuscripts seldom referred to, and indeed with the exception of the Holy Scriptures, the remnant is but a tissue of absurd Church controversy, and lying monkish legends.

144. Thirty days constitute a month, to which five days and the fourth part of a day are added to complete the year; this interpolation is called "*quagmin*," and is introduced after the month of September, the 9th day of which, according to our style, commences the Abyssinian year. The year is also divided into four quarters, each being named after the Gospel, which ought to be at that season reading in the churches. From September to November, Luke gives name to the period; from December to February, John; from March till May, Matthew; and during the remaining months, Mark. Events are commonly referred to as having occurred during the days of Matthew, &c., but they have lost eight years in their computations of time, and our present Christian era of 1842, has only reached to 1833 of Abyssinian reckoning.*

145. Superstitious to a degree, the Abyssinian will undertake no expedition or serious journey without, in the first instance, receiving the desired omen of approbation from on high, and retracing their steps on various pretences, they remain in their houses for days until the welcome sign be witnessed. The sight of a hare is very bad indeed; an antelope springing across the road, good; a fox barking on the left hand, destroys all hope of a happy result; but on the right hand, a prosperous issue may be expected; but of all the numerous birds of ill fame, is the "*Goo-rasovula*." (?) Certain death or destruction, or the most dire disaster are certain to follow his croak, and there is no inhabitant in the kingdom, who has not some story to confirm the bad character of this evil bird. The fool-hardy wight, who giveth no heed to the warning note

* Giving the world an existence of 7334 years, they calculate that our Saviour was born in the year 5,500 after the Creation, and thus account for their deficiency.

being of a certainty either baulked in the object of his journey, robbed, maltreated, or murdered.

146. Savage man obtaining only through the medium of his own wishes and imagination a faint idea of the invisible and supreme Power, seeks for some tangible object of veneration and means of protection, and the Abyssinian, whose vague religious ideas afford him but small consolation in the hour of tribulation, and little reliance of security in the day of danger, reposes the utmost faith in the doctrine of charms, which present a substance stamped with ~~the~~ mystic and supernatural character, and capable of being attached to himself individually. The "*tulsim*," which is a worked zone studded with tiny leathern pockets, containing sacred charms enclosed in double and treble cases, encircles the waist of every man, woman and child in the kingdom; the arms and neck are also hung in a perfect panoply of amulets against the influence of every disease, whether experienced or anticipated; the written talismans of holy monks, mixed with the seed and leaves of potent witch plants, gathered by the hand of the forest recluse, afford a feeling of security which is not to be extracted from the leaves of the Gospel; and no one ever thinks of mounting his mule, without being well stored with these paper preservatives against the spear of the robber, or the sharp knife of the Galla.

147. On the first arrival of the Embassy on the frontier, the simple natives on their knees implored the gift of the anxiously desired charm against the charge of the dreaded lion, and the king himself, by no means free from the prevailing superstition, had in his possession two talismans, which till lately he considered of high dread and import; they were inscribed on parchment in the French language, one containing a portion of the Lord's Prayer, and the other the words, "May God open the eyes of Sabela Selassie to his errors."

148. Their superstitions are childish as they are numerous. They believe in the evil eye, in the existence of evil spirits who roam about the earth and waters, and in every description of omen, and the ignorance of many is passing strange, considering St. Michael to be God Almighty; the Virgin Mary the creatress of the world; and Sunday, to have been a saint of great sanctity, far superior to St. George or St. Michael, which has ensured for him one day in seven to be held holy to his name, whilst the others have their festivals only once during the month.

149. Eclipses of the sun or moon, as in other savage countries, afford an ample opportunity for the most abject superstition. They believe the orb to be dead, and that her demise prognosticates war, famine and pestilence. The whole town is in tumult and uproar, collecting together in the streets and churches, they cry aloud upon the Saviour of the world to take pity upon them, to screen them from the wrath of God, and to cover them with a veil of mercy for the sake of Mary, the mother of our Lord. The pagan Galla, who are present lifting up their voices, join in the petition, and from their not comprehending the Amhara tongue, render the most absurd construction on the prayer; the wailing continues during the whole period of obscuration, and when the orb again emerges, a universal shout of joy is raised, in the full belief that the prayers of the multitude have awakened her from the sleep of death. Any neglect on their part, of these accustomed exertions, is certain to be followed by some great public calamity, and the raining down of fire from heaven.

150. The "*beza*," or sacrifice for the sick, is considered lawful and efficacious, and is frequently resorted to; the animal which is meant as the type of the sick man is driven round the bed of the invalid amidst much noise and singing, and afterwards slaughtered outside the threshold, and at other times, an egg is turned three times towards the head of the patient, and then broken besides the bed.

151. Whilst no religion can be more corrupt than the nominal Christianity of this unhappy nation, which is a mass of absurdities borrowed from the Jew, the Moslem and the Pagan, nothing can be more humiliating than the superstition which it encourages. A thread of cotton yarn is stretched by the hired sorcerer during the night completely round the house, the extremities are fastened together by means of a link of iron, well imbued in blood, and the walls are freely sprinkled and bedaubed with gore, the day dawns upon the incantation which is supposed to be the work of the devil himself; and of the assembled multitude, who consider that some heavy calamity, if not instant death, would follow the act, there is not one individual sufficiently bold to remove the spell, and thus release the inmates from its withering effects. On one occasion, when the inhabitants of Ankobar were thrown into the greatest consternation by the dread appearance of the bloody finger, the Reverend Mr. Kraff tore away the charm, to the astonishment of all, without any fatal consequence to himself; but that very night the defeated sorcerer planned an attack

to rob his premises, which was only defeated by the extra vigilance preserved in consequence of having exposed the impostor.

152. No Amhara will venture to destroy a serpent save on Saturday and Sunday, when the sight of one of these reptiles is regarded as a favourable omen. In common with the heathen Galla, the Christians of Shoa make annual votive sacrifices in June to "*Sar*," the evil spirit, continuing the practice notwithstanding its being interdicted by royal proclamation under the penalty of forfeiture of property. Three men and a woman, who understand how to deal with the evil one having assembled at the place appointed, perform the ceremony in a newly swept house. The sacrifice consists of a ginger coloured hen, a red she-goat or a male Adaiel goat with a white collar; the blood of the victim having been mixed with grease and butter, is secretly placed during the night in a narrow street, when all who step or tread thereon, are supposed to receive the maladies of the invalid, who in return is restored to perfect health. The king perceived traces of this Pagan ceremony in the streets of Motatiel during a visit to that village some years ago, and tracing it to a wealthy individual who had caused the rite to be performed in order to free himself of syphilis, the honor of true religion was forthwith vindicated by a speedy transfer to the royal coffers of all the property of the dabbler in unholy rites.

153. The drum of the water kelpie is heard by the credulous native in the echo of every roaring waterfall, and the wretch drowning in the overflowing torrent is dragged under the rushing wave as the highly coveted food of the malicious spirit of the deep. Divers plants and herbs possess the most baneful properties and qualities, and a bunch of the Fegain grass, if skilfully cast upon the person of an obnoxious enemy, produces dire disease, sickness and death.

154. Sorcerers and necromancers attaining the respectable age of 4 and 500 years, exist in numbers in this land, flitting through the air and riding upon the wings of the wind at pleasure, and unbidden and invisible guests, eating the best and drinking the choicest liquors on the festive board.

155. "*Thavanan*," the great sorcerer of modern days, is looked upon with universal dread, and his last public act is still fresh in the memory of the present generation. He had for a long time indulged his palate, and enjoyed his place unseen at the king's own table, but being at

length informed against by one of his malicious fraternity, he was by means of a strong spell exposed in the fact, and ordered to instant death. "Grant me but my life," he exclaimed, "and I will explain to your Majesty this grand master-stroke of my powerful art." The curiosity of the monarch was excited, and a large vessel of water which had been requested was set before the magician. Placing his hand in the liquid, he addressed the king: "Oh descendant of the race of Solomon, the wit of thy illustrious father is dull in comparison with the wisdom of the meanest disciples of Arobal, I defy thy myrmidons and thyself," and cleaving the air as he uttered these words, instantaneously disappeared from the gaze of the astounded and crest-fallen court.

156. *Arobal Mammoo*, the king of the Genis, is supposed to reside in the depths of the large lake in Mans, called *Moofat Wuha*. In the bosom of its placid water his palace is placed, constructed of the usual fairy materials; coloured cloths abound in every apartment, and his drums are heard pealing from the centre of the lake, when famine, war or pestilence is about to visit the land. Any one desirous of studying the black art after destroying his *mahtab*, (the badge of Christianity,) and treating the emblem of faith with certain irreverences, proceeds into the depths of the waters, is met by the genius, and kindly instructed in the arts of magic and necromancy; after a lapse of time he resumes his blue silk cord and is suffered for a time to exercise his supernatural power upon earth, but his knowledge gradually decays, it cannot be resumed, and the sorcerer again sinks into the uninteresting character of an Abyssinian Christian, without even the usual conclusion of having lost his soul, or being in the end carried away in the talons of the foul fiend.

157. It is fully believed, that one of *Arobal's* disciples succeeded by the power of his medicines in transferring all Asfa Wassun's concubines to his own harem, and having been seized and remonstrated with on the gross impropriety of his conduct, he behaved in the most insolent manner, and referred the proceeding entirely to the high assistance of his friend, the genius of the lake. In his extremity, he was deserted by the spirit, and the *crim. con.* being fully established, he was put to death by order of the king, and the misguided ladies brought back in durance vile to the palace; but his character for subtle medicines was fully established, as one of the concubines shortly afterwards de-

prived the monarch of his eye-sight by means of a powerful spell, which had been imparted by her learned paramour.

158. But the enchanted village of "Daska Stephanas," hid from mortal gaze, and enclosing upon earth all the pleasures of paradise, forms the never-failing topic of all wonder-loving souls; the poetic fancy of Abyssinia has been utterly exhausted in depicting this rare scene of delight.

159. "Its sleep-soothing groves with lawns between, are situated on the Nile, where released from the loose shackles of all marriages whatever, beautiful females are plentiful as they are common. Potent liquors flow on in never-ending streams, and the earth yields her spontaneous fruits without care or labour. But shrouded in the magic mist, these Elysian fields open their portals only to mortals of commanding form and handsome feature, on whom the glance of favor has been cast by the fair inmates of the enchanted garden; human endeavour is of no avail to unriddle the mystery, and the dread art of the sorcerer and his most powerful talismans, are alike unavailing to unloose the spell for the benefit of any of those unfortunates on whom nature has bestowed a tortuous figure, or an ill-starred visage."

160. The blacksmith is also endowed with supernatural powers by the credulous Abyssinians, and is supposed to be able to transform himself at pleasure into the likeness of a wolf or hyena; the cunning practice being in common use amongst the craft of secretly encasing the whelp of one of these animals in a metal collar, which being retained in after life, strengthens in the eyes of the uninitiated the fabulous stories in circulation.

161. The presence of any Christian emblem, badge, or portion of the Holy Scripture is supposed to neutralize the handicraft of the dreaded artist. The metal cannot be wielded in sight of the cross, and will by no means assume the required design, should any scrap of the Bible be worn on the person of the bye-stander. Whilst fumbling with their imperfect instruments to transform a bar of iron into the necessary repair of one of the galloper guns, the small draft of air which proceeded from the tiny bellows, proved insufficient to heat the metal, and the native artists' smelters declared aloud, that the phenomenon was consequent on the presence of some holy charm. Badges and emblems, charms and amulets were incontinently stripped off by all; the labour

was renewed without any better effect, and the smiths stood aghast at the enchanted bar which would not become heated.

162. The large forge bellows of the Embassy was produced, and a sufficient blast being obtained, the assembly were ordered to don all their paper preservatives and stand round the anvil, the sparks now flew under the brawny arm of the European, and the job was forthwith completed, to the utter dismay of the Abyssinian magicians, who came privately to request, that no further public performance of the sort might henceforth take place, as their name and glory would entirely depart from the land.

163. Sickness and misfortune are attributed to the effects of the evil eye of the Bondak. Long consultations are held to discover the person whose sinister look has imparted the calamity, and when the suspicions have gradually settled into conviction, the most implacable hatred is ever afterwards entertained towards the dreaded personage, and although concealed under the guise of indifference, which the savage can so successfully assume, yet the opportunity of revenge is never lost sight of, and the sweet morsel is obtained in some underhand dealing of after-life. Dedjmatch Harloo, the father of the Dedjmatch-ou-lie, added much to his notoriety by the extermination of all the Bondaks he could lay hands upon. Superstition exulted in a reeking hecatomb of human victims, and the love and veneration of his subjects knew no bounds on his last summary act of collecting together, and roasting to death 1300 of these miserable wretches, who were supposed to possess the influence of the evil eye.

164. The Abyssinian contrives to fill up his craving stomach, and in general possesses a sufficiency of covering to preserve him, after his fashion, from the inclemency of the weather. The climate is indifferently good, and the earth yields her treasures without much fatigue or bodily exertion, but the food is not of the best description, the style of life and habitation most uncomfortable, and all combine to engender the seeds of disease and death, and to reduce the limit of existence to less than three score years and ten.

165. Elephantiasis is known in its most loathsome forms. Ophthalmia seems to be common, and syphilis is met with in some shape or other on every second individual. Leprosy is rife among the community, and the mountainous nature of the country renders the atmosphere sufficiently damp and cold for the location of rheumatism and catarrh;

altogether the inhabitants are decidedly open to all the ills to which flesh is certain heir in the most favored part of the globe, and they do not possess the more civilized means of alleviation.

166. Medicine is yet in its infancy, and charms and amulets, and sacrifices are resorted to, in the hour of sickness. The potent purgative, *cosso*, is applied to on almost every occasion, and its debilitating effects no doubt lead to shorten life. Paddling about in the mud with naked feet, and exposing the bare head to the sun, the blast and the tempest without any reference even to comfort, cannot prove conducive to health, and residing in frail fragile tenements amidst dirt and vermin, and surrounded by filth and putrefaction, must have the most injurious effect upon the constitution. The low regard with which all females are entertained, debars the enjoyment of conjugal affection. The want of education denies the profitable and pleasant employment of leisure time. Coarse fare is the general lot; little amusement or holiday vary the dull monotony of life, and bullied by the Church, the king, and the nobles, a short existence is passed in this world in no very great happiness or comfort, and the spirit passes away without any very distinct idea of what is to happen in the next.

167. Compared with the other nations in Africa, Abyssinia certainly holds a high station, superior in arts and agriculture, in law, religion and social condition to all the other benighted swarthy children of the sun, and the portion of good which does exist, may be justly ascribed to the remains of the wreck of Christianity, which although stranded upon a rocky shore, and buffeted by the storms of ages, still continues to contain a few precious gems amidst the overwhelming mass of sand and sea spume.

168. But the misery, the filth, and the moral degradation in which she vegetates, sinks her far below the level of any European nation, and the parent land remains obscured in the fogs of her original barbarity, whilst the morning sun of intelligence has in the mean time lightened upon the social existence of her remote colony:* nay she has even

* Customs rarely alter in a country so entirely isolated as Abyssinia, and where the influence of new ideas cannot lead to the perfection of the arts and sciences, and many of the present usages in the land would, in some measure prove what the Ethiopians affirmed in the time of Diodorus, that Egypt was originally one of her colonies; the very soil and earth being brought down from their plateaus by the flood of the Nile,

retrograded from her pristine state, and the great empire of Ethiopia has long since cracked and fallen to pieces. The shadow of a mighty name, the pagans have overrun her fairest provinces. The Christian chiefs of every district madly strive for superiority, and the great horrors of war are only averted by the imbecility of the national character. Still monks and priests and aged men are wantonly put to death. Houses and villages sacked and destroyed, and the stream of oppression rises hot and heavy from every quarter of this distracted country. The property, the liberty, and the reputation of the subject are entirely at the caprice of the ruler, domestic ties and affection are little known or understood; small comfort is enjoyed in the transactions of private life; the debasing effect of extended slavery holds firm footing upon the mind; superstition shrouds the land in her thick veil; and the day seems to be yet far distant, when she shall stretch out her hands to heaven, and be at peace with her Maker.

169. In arts, in industry, and in moral existence, Abyssinian Shoa remains indeed secluded in a dense cloud of darkness; her agriculture is the only redeeming feature, but the fertility of the soil is rather to be praised, than any great advances she has hitherto made in the science of husbandry.

170. Manufactures are restricted to the supply of the most simple wants: a coarse cotton cloth to cover nakedness, a skin of leather to serve as a bed, a mat basket to contain the most necessary food. The gold and silver ornaments are certainly made with some taste, but being solely for the benefit of one individual, cannot be thrown into the balance of the national account, and the little that is understood extraction of the metal from the earth evinces great imperfection of talent.

and there existing at that time a striking resemblance in many of the customs and laws of the two nations, each giving the title of Deity to their kings. The funerals in either country being performed with equal care and splendour; the writing in usage being the same in both countries; and the knowledge of the written character retained solely among those belonging to the priesthood. In both countries there are monasteries and religious colleges organized after a similar fashion, and those who are consecrated to the service of God, are supposed to practice the same rules of abstinence and sanctity; they are dressed alike, and have shaven heads, their kings wear the same description of robes and ornaments. The hair of the commoners is still dressed after the fashion depicted in the ancient Egyptian designs, and the use of sandals fabricated of leaves, which is recorded in ancient Egyptian story, is to this day extant in Abyssinia.

171. The difficulties and perils of the journey, and the unsettled state of the country, oblige to travel in caravans, and the slow tramp of the wearied mule, and the foot-sore slave, render commercial intercourse dilatory and of rare occurrence. Salt is still the great staple of importation, together with a few beads and coarse Arabian manufactures, and the return, which is made in grain, cloth and slaves. is certainly neither to the profit, nor to the increased enlightenment of the Abyssinian.

172. All the accommodations of life are simple and limited; the houses are mere stakes badly plastered with earth, and afford little shelter from the elements, while the internal arrangements are equally rude and scanty.

173. The intellectual features present a peculiar deficiency. Few can read the character, and still fewer understand the meaning of the manuscript. The educated priests for the most part learn like the parrot, by rote, and rant at the top of their lungs, passages of which they know not the sense. The utter ignorance of the laity is truly deplorable: few can spell out a line during an hour's severe exertion, and none can write three words together. Their books are all of a sacred nature, and being written in an unknown language, are looked upon in the light of charms, specially if well bound and filled with pictures; and although the kiss of debasing superstition be imprinted upon the colored daub, the intellectual vision remains unlit by the words of the text.

174. Poetry and painting are in their veriest infancy. Music has been ushered into existence a deformed monster; and architecture still remains unbegotten in the dark abyss of Abyssinian ignorance.

175. In religion they are debased, superstitious, and bigotted, believing the most absurd and ridiculous doctrines, and resting their only hope of salvation on fasts and pilgrimage, on confession and priestly absolution.

176. In private life their character is equally despicable, and they have strangely contrived to accumulate all the vices of civilized as well as of savage life, and have succeeded in retaining but few of the virtuous traits of either. Nay, their very existence is the vegetation of a noxious weed in the foul kennel; but the refinements of civilized society have not as yet supplied the beauties of original simplicity. The box of

Pandora has indeed been doubly locked after allowing all the scourges of mankind to escape with their full muster of attendants, and all the horrors of savage warfare, of merciless slavery, and of debasing despotism ride triumphant over the land.

177. Cowards, fanatics and liars ; cruel, superstitious and profligate ; proud of their deformities, and constant only in their inconstancy, they are bullies and beggars of the most transcendant character, whilst their dirty unclean habits render them a perfect nuisance to all with whom they come in contact ; glorying in the most savage, revolting and barbarous practices, which are hardly credible, except to eye-witnesses, their life is at complete variance with all the ordinary customs of other people. Brutalizing, like wild beasts on raw bloody flesh, when others have adopted the spit and the kitchen fire ; wearing no protection on the head and their feet, when all others having long since proclaimed the necessity of the covering ; exposing their naked persons as a sign of respect, contrary to every received law of shame, and existing in all the filth of unwashed persons and dark unswept hovels, they have indeed but little cause for the inordinate self-pride in which they hyperbolically style their petty location the finest of countries, and its unclean inhabitants, the only true Christians in the world.

History of the Abyssinian Church.—English Missions.

The departure of the Jesuit Patriarch was followed by a fierce persecution of all who were in any degree tainted by the abhorred faith of the Romans, and the last legacy of the western priest proved a fatal gift to the possessor. Suspected individuals wherever found were immediately put to death, and in accordance with the earnest entreaties of the population, and with the long established usage of Ethiopia, a new Abuna was appointed from Egypt, to preside over the ancient religion, now firmly re-established throughout the land.

But the failure of the ambitious designs of the Church of Rome had in Europe been entirely ascribed to the arrogance and cruelty of the emissaries employed, which had created so deep and lasting a hatred among the mass of the inhabitants ; and the milder order of French

Capuchins was accordingly put in requisition to bring about the desired re-union with the heretic church of Abyssinia. Six chosen men of the order, fully provided with the firmans of protection from the court of Constantinople, were first entrusted with the enterprize during the middle of the seventeenth century, of these four succeeded in penetrating into the country, but only to suffer the martyrdom of St. Stephen, and the remaining two, terrified at the fate of their unfortunate brethren, returned without hope of success to their monastery in France.

The zeal of the order nevertheless made one further effort in the cause, and again three doomed friars landed at Suakem, whence they despatched a letter to congratulate the Emperor on their safe arrival in his vicinity. Instead, however, of the anticipated presents, and means of conveyance to the court, an order for their execution was received by the governor of the town, and the stuffed heads of the fathers were forwarded for inspection, that the fair skin and the tonsure of the foreign priest might be fully recognized, and the promised reward be claimed by the inhospitable Pacha of the Coast.

Poucet's interesting descriptions still remain to commemorate a further quest which in 1700 was undertaken, in company with a member of the Society of Jesus; but the partner of his journey died in Nubia, and many doubts have been reasonably entertained regarding the truth of the physician's narrative. Matters are painted with more than travellers' license, and the imagination freely drawn upon for facts that never existed. The close of his career also served to throw a deep shade of disbelief over the minds of even the most credulous; for after receiving from the French monarch magnificent presents for the Emperor and Court of Abyssinia, he crossed the Red Sea, and penetrating into Persia, died at Ispahan, with the character of being a perfect impostor.

A last attempt was made a few years subsequently by Pope Clement XI, and four German Franciscans were despatched in the cause of Rome to the country of the intractable Abyssinian. The poverty of these missionaries, and the humility with which they refused all temporal wealth, touched the heart of the reigning emperor, and although he forbade them to preach in public, he pledged himself to protect their lives and promote the cause of their mission. "Your work is difficult," said the monarch, "it demands time, and you must be prudent, and not

arouse the prejudices of the people ; God did not create the world in one moment, but in six days."

Finding secret admission into the houses of many individuals, the Jesuits were beginning to gain ground, when the monks and clergy, who had suffered the most severely during the former struggle, raised an outcry, that the Europeans were the enemies of the Mother of God, and had blasphemed her holy name. The tumult became universal, and a powerful conspiracy was arranged to poison the friars, and dethrone the emperor. David, a young prince of the imperial family was called to the throne, and the unfortunate missionaries having been dragged from their place of concealment, were condemned to forfeit their lives.

On being offered a free pardon if they would abjure the Roman faith, the last martyrs to the cause indignantly rejected the proposal, and the young monarch struck with their devotion and endurance under severe and perilous trial, commanded that they might be banished from the land ; but the monks preferred stoning them to death, and the event accordingly took place in the year 1718.

So ended the ardent endeavours to substitute one superstition in the room of another. Time, and life, and means, had been wantonly expended, that the triumphant chariot of Rome might grind over the neck of the Abyssinian ; but the costly sacrifice was impotent, and the ambition of binding a far country in the fetters of spiritual slavery sunk deservedly to nought.

Another century rolled on before the Christians of the West bestirred themselves in the cause of enlightenment. The Apostolic Church had fallen from her high place, and it was reserved for the members of another faith to carry the glad tidings of salvation to the benighted people of Ethiopia.

The great traveller, Bruce, had now for ever broken the mysterious seal of ignorance which had hitherto bound the land as with an iron zone, and his Abyssinian friend and companion, the learned Abraham, after ten years of patient industry, had completed his pious labours. A translation of the Holy Scriptures was faithfully rendered into the popular language of the country, and the precious document was purchased in 1818, by the Bible Society of Great Britain.

The Reverend Messrs. Gobat and Kugler first penetrated into northern Abyssinia, and established their residence at Adowa, and the Reverend Messrs. Kraff and Isenberg, followed in the same path.

The words of the true Gospel were listened to by the natives with every attention, and amidst a scene of universal corruption, the pure lives of the preachers were beheld with amazement. But intrigue and foreign influence produced a revulsion in the mind of Aubie, the tyrant prince of Tigré, and the order for departure to the coast was enforced by the governor of the town, who was anxious to possess himself of property, that could not be removed from his avaricious grasp. Their names, nevertheless, remain in the land, and to this day the English missionaries are spoken of with the greatest reverence, as possessing every quality that was good, mild, and just.

Ardent zeal in the cause of Christianity again induced Messrs. Isenberg and Kraff to brave the dangers of an unexplored route through the fiery desert of the inhospitable Adaiel, and to endure the foul annoyance of a savage existence. The kingdom of Shoa now forms the theatre of their praiseworthy exertions. Dogmatical treatises have been ably penned in the vernacular language of the country; a school in the capital extends to the rising generation the means of improvement, and the example of a holy life will no doubt produce a happy effect.

But the uphill task of the missionary is indeed hard, and the wonder is, that any thing has been accomplished, and not that the harvest is scanty. Disliked as a stranger of envied accomplishments, despised as an alien to the land, and hated by the ignorant and bigotted priesthood, the words of truth fall unheeded from lips the most eloquent, and the most zealous endeavours prove of little avail. Perfectly satisfied with his own creed, the Abyssinian finds it easier to kiss the holy book than to peruse its contents, and to trust to the priestly absolution, instead of moulding his conduct according to the doctrines of pure faith. The rude artizan is esteemed of higher importance than the erudite Missionary, and blinded by the grossest superstition, engulfed in a sink of bestiality, and wedded to the manners, the customs, and the doctrines which are diametrically opposed to the evidences of the Gospel, it is not until the arts of civilized society shall have been introduced, and the neck of the self-sufficient Abyssinian bent under the superiority of the

stranger, that the barrier can be finally overcome, and one step be gained towards the restoration of the unhappy country of the true word of God.

The constitution of the church, the second great power of Shoa, is simple, and the sway over the public mind seems to be the effect rather of individual power than of a public body. Few lay men attend a chapel unless on the festival of their own saint ; but all present offerings according to their means, and whilst few peruse the Holy Scriptures, every great man entertains in his house a priest in the capacity of father Confessor. In every clerical conclave, the king possesses the supreme voice of authority, and as from him proceeds, in a principal measure, not only the more temporal comforts of bread, beef and hydromel, but also punishments for real or fancied delinquency ; the despotic monarch may here be justly regarded as the head of his own Church.

The Abuna or Archbishop is, however, the real spiritual chief of Ethiopia ; consecrated by the Patriarch of Alexandria, and possessing with rich revenues, the intelligence of other lands : he is universally feared and respected throughout the empire, and all religious differences and dissensions must be carried for his final decision. Princes and rulers pay implicit deference to his high behest, and seated on the ground before his episcopal throne, receive, with the utmost respect, his every wish and advice.

Feuds and quarrels betwixt state and state are satisfactorily arranged in his presence, and war, tyranny, and violence are controlled by his commanding voice of mildness and benevolence. But the extent of his diocese is great, and many local difficulties oppose the pastoral visit to the extremities of his See.

The wild Galla, the bigot Moslem, and the pestilential morass, intervene in every direction, and the kingdom of Shoa, peculiarly insulated by these obstacles to access, has for ages been deprived of the advantages accruing from the residence of an Archbishop.

In the hands of the Abuna are vested the exclusive power of consecration. Bishops, priests, and deacons can from him alone receive holy office and function ; and before assuming the clerical crook and cloak, the inhabitants of the most remote provinces must invariably repair to his court to undergo the requisite examination, and receive the indispensable blessing and authority. He only it is who grants ab-

solution for heavy offences against either God or man, and the ark of a church, whether newly constructed or polluted by the unhallowed touch of a Mahomedan, must be purified by his hands, with the holy *merom*, before being entitled to that high adoration which it thenceforward receives.

The second place in spiritual dignity is filled by the *Cheggrie*, the head of the monks, seated on the throne of Tekla Haimanot, one of the first founders of the orders of seclusion. He engrosses the management of all the various monastic establishments throughout the empire, and in his hand remains the charge of existing literature and education. Deeply versed in the subtleties of theology, his opinion is held of the highest import in the never-ceasing disputes upon the uninteresting subjects of false faith, which occupy the mind of the Abyssinian divine; but his authority extends only to the simple admittance into the monkish order, and to granting absolution for the minor offences of evil thought and prescribed fasts neglected.

The offices of the *Comus*, or Bishop, who ranks next above the common priest are few and simple. Without diocese or even authority over the inferior members of the Church, his peculiar function is to bless and purify the sacred ark, should it accidentally receive the impure touch of the deacon or layman, to repeat the prayer of admission, and sign the cross on the skull cap of the candidate for the monastic seclusion, and to afford absolution for trivial offences against the conscience.

Ignorant, bigotted, and licentious, the priesthood of Shoa are restrained under little rule or authority. The beauty of morality influences not their conduct, and punishable only by the king, or by their own brethren vice, excepting of the most flagrant nature, and resounding through the voice of an indignant people, is screened by the fellow-feeling of the sympathizing judges. Their number and cause might effect high power in the realm, but indolence and dissolute habits counteract the influence; and contented with the outward mark of respect from a besotted multitude, and enjoying a fair proportion of the good things of this world, they give little heed for the care of souls, either here or hereafter.

But in order to obtain the desired and enviable position of eating the bread of comparative idleness, a sacrifice is indispensable. The priest is restricted to the possession of one single wife, and on the demise or infidelity, no second marriage is authorized.

A small portion of labour must moreover be endured, the psalms of David must be carefully conned, and the mysteries of Abyssinian song and dance be fully penetrated before the sacred office can be obtained. The lessons of early youth are, however, soon forgotten, and the constant repetition of the same words, removes the necessity of retaining the character. Few in after-years can read, and still fewer respect the vow of celibacy; and the morning hours of the Sabbath and of the holidays, employed in dancing and shouting within the walls of the church, entitle the performer to all immunities, and comforts pertaining to holy orders.

Divine service within the precincts of the sacred edifice is limited to the delivery of a passage of the Gospel rendered into ancient Greek, a language long since dead throughout the land. Psalms are bawled at the extremity of stout lungs amidst capering and clashing of timbrels; the miracles of Saint Mary and of St. George are chaunted, and the worship is invariably concluded by an equitable division of the consecrated bread, which remains from the morning communion.

The rite of baptism is performed in an adjacent building, and the solemnization of matrimony is rarely resorted to in the land; but the death and the funeral feast are studiously attended, with much advantage to the temporal interests of the church. The choicest food is unsparingly dealt out to all, and the bereaved widow is glad to leave the management of her affairs to the assiduous father confessor. The dying man bestows a portion of his estate in this world for the bright hopes which absolution extends in that which is to come, and the holy sacrament is even administered after the soul has quitted the tenement of clay, in order that the superstition of grateful relatives may grant a rich reward for the blessing of the priest, and his undeniable assurance of exemption from the pains of punishment hereafter.

Deacons are usually chosen from among children of tender age, and on reaching maturity the life of the adult is not distinguished by the spotless purity of his duties in the office. The functions of these juvenile noviciates are light, it is theirs to be present during Divine service in the capacity of servitors and assistants, to complete the requisite number at the celebration of the holy communion, and to guard and preserve the sacred ark in case of accident by fire or water.

This mysterious casket is an object of all-engrossing adoration, and in its presence consists the only sanctity of the church. All prostrate

themselves to the ground, as the box, which resembles the Jewish ark, is carried in procession through the street, and when replaced in its case in the holy of holies the air is rent by the attendant priests with shouts in the temple of the eternal God.

Fasts, penances, and excommunications form the chief props of the clerical power ; but the repentant sinner can always purchase a substitute to undergo the two former, and the law of the Church is readily averted by a timely offering. Spiritual offences are indeed of rare occurrence, for murder and sacrilege alone give umbrage to the easy conscience of the Abyssinian, and all other crimes written in the book of Christian commandment have been well nigh effaced from the surface of the tables. The nation is by no means religiously inclined, and the strict observance of weekly fasts, with suitable largesses to the priest and mendicant, are quite sufficient to ensure the requisite absolution for every sin committed in the flesh.

The churches are in general very miserable edifices of wattle and mud plaster, distinguished from the surrounding hovels by a thin coating of whitewash, which is dashed over the outside, to point with the finger of pride to the peculiar privilege of the two great powers in the land. Circular in form, the wretched thatch is surmounted by grasses glittering with brass and ostrich eggs, whilst the interior decorations are guided by the same depraved and heathenish taste.

Eight feet in breadth, the first compartment stretches after the fashion of a corridor, entirely around the building, and being strewn throughout with green rushes, forms the scene of morning worship. To the right of the entrance door is the seat of honor for priests and erudite scribes, and beyond this court, save on certain occasions, the bare foot of the unlearned layman cannot pass.

The uncleansed walls are festooned with ancient and dingy cobwebs, no inappropriate drapery to the wretched daubs which serve to cover the mud, and are designed to represent St. George and his green dragon, the patron saint of the church, the blessed virgin, and a truly incongruous assemblage of cherubims and fallen angels, with the evil one himself enveloped in hell's flames.

A dark inner compartment forms a last separation from the holy of holies which contains the sacred ark, and is completely shrouded from sight by the screens of glaring cotton cloth. Timbrels and crutches de-

pend in picturesque confusion from the bare rafters of the roof ; no ceiling protects the head from the descent of the lizard and spider ; and the *tout ensemble* of the Abyssinian church presents the strongest mixture of slattern finery and of squalid filth.

Certain revenues and estates are set apart for the support of each clerical establishment, and to ensure the proper distribution, an *Alaha*, or chief, is elected by the monarch from either class of society. Whilst a successful foray is followed by liberal donations from the throne, the safe return from a journey is acknowledged by an offering on the part of the private individual, and the shade of the venerable juniper trees which adorn the church yard, is ever crowded with groups of sleek hooded priests, who bask in the enjoyment of idle indulgence.

Loss of office is the great punishment inflicted by the spiritual court, which is composed of the assembled members of the individual church, and degradation is followed by the expulsion of the offending brother from the community. But the imperial hall of justice is no unfrequently graced with the presence of the refractory priest, and fetters in the dungeon, or banishment from the realm, maintain a wholesome fear of the royal power of investigation in matters ecclesiastical.

Monks swarm throughout the land, and the huts of the monasteries are always pleasantly situated in the depths of some shady forest around the church dedicated to the patron saint. Fields and revenues still remain in the possession of these orders, notwithstanding that the duties for which they were originally assigned, are now seldom performed. Education was in former days to be obtained alone from the inmate of the monastic abode ; and a life of scanty food, austerity, and severe fastings was embraced only by the more enthusiastic. But the skin cloak and the dirty head-dress now envelop the listless monk, who satisfied with a dreamy and indolent existence, basks during the day on the grassy banks of the sparkling rivulet, and prefers a bare sufficiency of coarse fare from the hand of royal charity, to the sweeter morsel earned by the sweat of his brow.

The monk is admitted to the order of his choice by any officiating priest. A prayer is repeated, the skull cap blessed with the sign of the cross, and the ceremony is complete. But a more imposing rite attends the oath of celibacy before the Abuna. Priests assemble in numbers

and fires are lighted around the person of the candidate. His loins are bound about with the leathern girdle of St. John, and the prayer and the requiem for the dead rise pealing from the circle. The Glaswa, a narrow strip of black cloth adorned with colored crosses, is then placed on the shaven crown and shrouded from view by the enveloping shawl, and the Archbishop, clad in his robes of state, having repeated the concluding prayer and blessing, signs with his own hand the emblem of faith over the various parts of the body.

But Abyssinia possesses no idea of the more salutary doctrines of Christianity. Polluted faith is here reflected in the mirror of her depraved manners; and long, severe fastings constitute the essence of her degenerate religion. The idol worship of saints has made rapid progress in the land, and the ignorance of her clergy is only to be equalled by the impurity of the lay classes. Their belief in Christianity, if that term can be applied, is strange, childish and inconsistent; and bigoted to the faith of their ancestors, they abhor and despise all who refuse to sign this, their absurd confession.

“That God created all religions in the world and that each is perfect of its kind except that of the Shankala, but that separate places are prepared for each creed in Heaven.

“That the Alexandrian faith is the only true belief.

“That faith together with Baptism, are sufficient for justification, but that God demands alms and fasting, as amends for sin committed prior to the performance of the baptismal rite.

“That unchristened children are not saved.

“That the Baptism of water is the true regeneration.

“That invocation ought to be made to the saints, because sinning mortals are unworthy to appear in the presence of God, and because if the saints be well loved, they will listen to all prayer.

“That all sins are forgiven from the moment that the kiss of the pilgrim is imprinted on the stones of Jerusalem, and that kissing the hand of a priest, purifies the body from all sin.

“That sins must be confessed to the priest, saints invoked, and full faith reposed in charms and amulets, more especially if written in an unknown tongue.

“That prayers for the dead are necessary, and absolution indispensable; but that the souls of the departed do not immediately enter upon

a state of happiness, the period being in exact accordance with the alms and prayers that are expended upon earth."

All ideas regarding salvation are indeed vague and indefinite, and vain, foolish doctrines have taken entire possession of the shallow thoughts of the Abyssinian. Born in falsehood and deceit, cradled in bloodshed, and nursed in the arms of idleness and debauchery, the national character is truly painted in the confession of one of her degraded Sons: "Whensoever we behold the pleasing ware, we desire to steal it, and we are never in the company of a man whom we dislike, that we do not wish to kill him on the spot."

Throughout the land the basest superstition reigns triumphant. The kiss of adoration is imprinted on the external pillar of the Church, and men proceed on their way in perfect security of the protection of the patron saint. The unwilling female is driven to the Communion Table only as a test to suspected infidelity. The preservation of a fast, and absolution accorded by a licentious mortal, form the first grand principles of the religion of Shoa, and it would indeed prove a far easier task to sweep from off the face of the land, the present meretricious fabric, and to raise up a new temple in its stead, than to attempt the Herculean labour of cleansing, as it now stands, the impurities of this augean stable.

(Signed) D. C. GRAHAM, *Captain,*
Principal Assistant to the Embassy.

Rites and Practices of the Abyssinian Church, which appear to have been adopted from the Jews.

A lengthened detail of all the absurd confusion of doctrines which prevails in the church of Shoa, would prove neither pleasant nor profitable to the reader, and may moreover be perused in the learned dissertations of the Jesuits; but those rites and practices which the Abyssinians appear to have adopted from the Jews, are well worthy of remark, and we here insert them as a sequel to fill up the blank in the foregoing sketch of the Church History.

It is a matter of high importance to separate the manners and customs which a nation has borrowed, from those that she has produced during the advance of time within her own pale; and from an adequate knowledge of her self-activity, some idea may be formed of the station to which Ethiopia may be admitted within the ranks of civilization; and of the expectations that may reasonably be entertained in how far her efforts could be rendered subservient towards the improvement of the moral and political state of benighted Africa.

Surrounded by many hostile tribes, and secluded from enlightened intercourse since the capture of the Upper Nubia by the Turks, and the possession of the Red Sea by their numerous fleets, Abyssinia has retained her customs with little alteration since the sixteenth century, although that slight modification may be observed, which is not uncommon in the general history of mankind. During the fresh cruelty of the successful invader, national rites and practices are maintained with more than wonted steadfastness; but when the first violent assault of enmity has yielded to a more quiet intercourse, a mutual interchange is admitted between the contending parties, and thus the Jew, the Moslem, and the Pagan have each in their turn contributed to the general stock of Ethiopia.

Many circumstances, however, have continued to render the Abyssinian nation peculiarly susceptible of Jewish ideas and influence; and the abilities of her learned historians have in vain been racked to devise the most becoming legend, by which to account for the introduction into the empire of such a multiplicity of Hebrews.

In accordance with endeavours of other nations to derive their ancestry from demi-gods and heroes, the kings of the country boast a direct descent from the house of Solomon, and flatter themselves in the name of the wisest man of antiquity.

The high sounding title of king of the Israelites is added to that of Emperor of Abyssinia, and the motto of the national standard floats on the breeze—"The Lion of the tribe of Judah hath prevailed."

"The Queen of Ethiopia" says the tradition, "whose name was Alaqueda, had heard from the Merchant Tamerin, of the wisdom and the glory of the son of Sirach, and resolving to visit him in his own country, she proceeded to the land of Israel, with all the rich presents that her empire could afford.

“After a season the royal body returned, and her son Menelech, the result of her visit to the greatest potentate of the age, was born, and in due time transmitted to his august sire. The young prince was duly instructed in all the mysteries of Jêwish law and science, and being anointed king, under the name of David, he was returned to his own land of Ethiopia, escorted by a large suit of the nobles of Israel, and a band of her most learned elders, under the direction of Ascarias, the son of Tradok, the High Priest.

“The gates of the temple of Jerusalem were left unguarded, and the doors miraculously opened, in order that the holy ark and the tables of the Law might without difficulty be stolen and carried away. The journey was prosperously performed, and the Queen Mother, on resigning the reins of authority to her son, caused a solemn obligation to be sworn by all, that henceforward no female should hold sway in the land, and that none but the issue of David should sit upon the throne of Ethiopia.”

Although this tradition may in itself be considered inconsistent and improbable, the firm belief in the origin thus traced, will in a great measure account for the general inclination and consent to receive Jewish rites and practices, as they were in process of time presented.

The fable of Queen Maqueda was in all probability the invention of fugitive Jews, who after the destruction of Jerusalem by the Emperor Titus, emigrated to Ethiopia by way of the Red Sea, who disseminated the tradition with the design of obtaining the desired permission to settle in the country, and whose descendants, under the name of Falashas, are still extant among the mountains of Simien and Lasta.

The real queen of Sheba or Saba, known to the Arabs under the title of Belkis or Nicanta, reigned over a portion of Arabia Felix. Want of geographical information and inquiry perpetuated the error of antiquity, which extended Ethiopia to Arabia; and the Sabacans and Homerites, who inhabited the Southern portion of the land, are frequently confounded with the swarthier sons of Africa.

But the queen of the South, who came to hear the wisdom of Solomon, brought along with her the produce of her own country; and camels and spices, gold and precious stones, pertains not unto Ethiopia. The first Christian Missionary found the inhabitants of Abyssinia idolaters and worshippers of the great serpent Arwe; whereas, according to

tradition,, the Jewish faith had been for ages established firmly in the empire.

No Hebrew literature remains to support the legend. The Holy Scriptures were not even translated into the language of the country. No connexion was in after-times maintained with the land of fellow-faith, neither was any assistance afforded in the day of her distress, when Israel suffered under the despoiling hand of the Abyssinian and the Babylonian, and bent her oppressed neck to the yoke of Egypt and of Rome.

The family of Menelech Ibnel Hakim are stated, in the *Kebra Negest*, the glory of the kings, to have possessed the throne in uninterrupted felicity until the year 960, when the massacre of the issue of Solomon was perpetrated by the woman Essat, and one solitary prince of the blood royal alone escaped to take refuge in the distant and loyal province of Shoá. During the succeeding four hundred years, it is asserted by the learned historians, that the usurping rulers of the fairer provinces of the empire were Jews, who exerted their utmost endeavours towards the propagation of their religious creed, and that when the legitimate dynasty was again restored under Ican Amlac, the Hebrew prejudices had taken too deep a root, to be easily eradicated from the mind.

But the names and histories of many of these usurpers still remain to confute the tale; and although in furtherance of political objects, privileges might have been granted to the numerous Jews residing in the country, it does not appear that the party ever gained sufficient preponderance to place one of their own faith upon the throne, and thus the origin of the existing rites must take a humbler flight to be in union with the truth.

Ignorance is indeed too glaring a feature in the character of the nation, and remains a monument of the first conspicuous fruit of her delight in the confusion of truth and falsehood; superstition required the consistence of fable, and learned doctors of the law became robbers of the temple. The conscience was not galled by the fabrication of ten thousand miracles, which stain the pages of her Church History, and the honor of Ethiopia triumphed in an origin, which was ascribed to base illegitimacy and intrigue.

The ancestors of those Jews who to the present day exist in Abyssinia, arrived long before the nation had embraced the Christian religion,

and in their attempts to obtain moral influence over their Pagan hosts, were far from being inactive in their adopted home. The early Christian church, that of Egypt especially, having embraced many Hebrew customs, was now introduced into a country, where similar doctrines and practices were already in use, and hence it arose, that the population so readily became converts.

In process of time the Jews increased in numbers, and a consequent augmentation of influence was obtained over the fickle mind of the Abyssinian. Christianity was wanting from the beginning, and their claim to the appellation of "*Habeshi*," a mixed and mixing people, was never more aptly exemplified than in the strange medley of religion which resulted in the confusion. A mixture from different nations—as stigmatized by the original term—they have garbled the faith of all their ancestors, and there is assuredly no Christian community in the whole world, which has jumbled together truth and falsehood with such utter inconsistency as the vain church of Abyssinia.

With the destruction of the race of Solomon, the Jewish party obtained the preponderance, because their assistance was indispensable to the usurper. Again, on the restoration of the legitimate dynasty, they were hunted among the mountains as a race accursed, and the feeling reigned paramount to sweep the wanderers from the face of the land. But the custom of ages had impressed the Hebrew practices too deeply to be removed. They were in fact regarded in the light of orthodox Christian doctrines, and as might have been expected from a wicked, bigotted, and superstitious people, the severest persecutions were enforced against the members of another creed, without the Abyssinians observing in how far they were themselves tainted with those very principles, which in others they considered so justifiable to oppress.

The same restrictions which prohibited the Jews from partaking of the flesh of certain animals pronounced unclean by the Mosaic law, still heavily binds the stubborn neck of the Ethiopian. The act which is deemed disgraceful in the eyes of men is in itself firmly believed to be a moral transgression, and is visited, as was the case in the Mosaic institution, by the stern reprimand of the priest. The penance of severe fasting, or of uneasy repose upon the bare ground is enforced by the father confessor, to efface the taint of the interdicted animal; and prayers must be repeated, and holy water piously be sprinkled

over the defiled person of that sinning individual, who shall have dared to touch the meat of the hare, or the swine, or the aquatic fowl.

“The children of Israel did not eat of the sinew which shrank, which is upon the hollow of the thigh.” This nerve is in the Amharic language termed “*Shoolada*,” and it is prohibited and held unlawful in Shoa, more especially to the members of the royal blood considered as highly unclean; it ranks with the carrion carcase, and the universal belief prevails, that the touch of the unholy morsel would infallibly be followed by the loss of the offending teeth, as a direct proof of the just indignation of Heaven.

The Abyssinian cannot be brought to admit, that every creature of the universe being alike the work of the Almighty, must necessarily be clean, and that those which are not noxious to health can therefore be used for man’s food, if accepted with thanksgiving towards the Creator. The liberal spirit of Christianity is indeed wonderfully clouded in darkness, and the stranger who professes its tenets, but withholds his subscription to the creed of narrow and fanatic ideas, is regarded as worse than the surrounding heathen, and condemned to eternal perdition.

The Jewish sabbath is moreover strictly observed throughout the kingdom. The ox and the ass are at rest; agricultural pursuits are suspended; household avocations must be laid aside; and the spirit of idleness reigns throughout the day.

Abolished by the orders of the great Council of Laodicea, the oriental churches were, after the observance of centuries, freed from this burden, and men gladly availed themselves of the ecclesiastical license to work on the Saturday. Here, however, the ancient usage agreed too well with the laziness of the people, systematically trained to indolence and sloth; and when a few years ago, one daring spirit presumed, in advance of the age, to burst the fetters of superstition, His Majesty the king of Shoa, stimulated by the advice of besotted monks, delegated his wardens throughout the land, and issued a proclamation, that whosoever disturbed the original dreary stillness of the Jewish sabbath, should forfeit his property to the imperial treasury, and his person to the State dungeon.

Ludoff, the celebrated Strabo of Ethiopia, most accurately remarks, that there is no nation upon earth which fasts so strictly as the Abyssinians, and that they would rather commit a great crime than touch food

on the day of abstinence. They not only boast, with the Pharisee, "I fast twice a week," but pride themselves also upon their mortification of the flesh during half the entire year; whilst the haughty and self-sufficient monk vaunts his meagre diet as the only means of expiation from sin and evil desire.

The Abyssinians, in common with other Christian communities who rigidly observe the fasts of Wednesday and Friday, advance as an argument, that the Jews seized our Saviour on the first of those days, and on the second carried into execution their design of crucifixion; but as this account differs from the evidence of the Gospel, which shews that the arrest took place upon Thursday, the observance is most probably an imitation of the weekly fasts in existence among the Jews.

The fast of the forty days before Easter is preserved with much greater rigour than any other in Abyssinia, and the reckless individual, who shall neglect the great *toma hodada*, cannot possess one sentiment of true religion in his heart. To the abstinence of this season especially are attached peculiar virtues, which completely nullify the effect of every sin that may be committed throughout the residue of the year.

According to the Jewish practice, all culinary utensils must thoroughly be cleansed and polished, to the end, that no particle of meat or prohibited food may remain to pollute the pious intention. Journeys and travels are strictly interdicted, and from Thursday until Easter moon, no morsel should enter the lip, and the parched throat ought to remain without moisture.

During the fast of the Holy Virgin, children of tender years are not even exempted from the penance of sixteen days; and during the many and weary weeks of abstinence which roll slowly throughout the entire year, the Abyssinian priest would grant no dispensation to the famished mortal, were he to receive an immediate mandate from heaven.

Sabela Selassie arose some years ago, a mighty zealot in the cause, and perceiving that the custom was beginning to decline, proclaimed, through the royal heralds, pains and penalties sufficiently severe to ensure the future strict observance of the fast. The commands of the defender of the Faith were however in one instance transgressed by a soldier during a military expedition; but his excuse of fatigue under a heavy load of the king's camp equipage was admitted; and although on similar occasions a certain license is extended, still the monarch pre-

serves a strict watch over the maintenance of church discipline, and delights to perceive the stranger imitating the hypocrisy of his own example.

All the absurd ideas of the Jewish Rabbins, regarding the dead, have been received and embraced by the fathers of Abyssinia. They maintain that the soul of the departed does not immediately enter into the kingdom of joy, but is conducted to an earthly paradise situated in an invisible spot between the heaven and the earth, where it remains until the resurrection in a state of happiness or torment, according to the alms and prayers bestowed by surviving relatives and friends. Niches in the same spot are also occupied by the saints, and the inconsistency of their faith fully appears in the belief, that the intercession of the Almighty is absolutely necessary of these very saints, who themselves require mortal mediation to be absolved from their spiritual imperfections, and to be suffered to rest in peace until the coming of Christ.

But the self-interest of the avaricious priest* is wrapped up in the preservation of this doctrine. The clergy riot in the price of death-bed confession, and a corner of the church yard is sternly denied to all who die without the due performance of the rite, or whose relations refuse the fee and the funeral feast. The payment of half a crown, however, wafts the soul of a poor man to a place of rest; and the *tescar* or banquet for the dead, places him in a degree of happiness, according to the costliness of the entertainment. The price of eternal bliss is necessarily higher to the rich, but German crowns procure the attendance of venal priests, who absolve and pray continually day and night, and the reeking burial feast is frequently devoured in commemoration of the event. Royalty is taxed at a still more costly rate, and the anniversaries of the deaths of the six kings of Shoa are held with great ceremony in the capital. Once during every twelve months, before the commencement of a splendid feast, their souls are fully absolved from all sin, and the munificence of their illustrious descendant is still further displayed in the long line of beeves, which afterwards winds its way to the threshold of every church in Ankober. •

The Talmud asserts, that those who die piously, remain in a state of active knowledge of all the occurrences of this world. Philo, the learned Jew of Alexandria, informs us, that the souls of the Patriarchs pray incessantly for the Jewish nation, and the erudite Rabbins believed

that angels are the governors of all sublunary things, and that a man in every country has a guardian angel for protection and direction. The Abyssinians carry this belief even further. They confidently anticipate the intercession of saints and angels in all spiritual and secular concerns. They invoke and adore them in even a higher degree than the Creator ; all their churches are dedicated to one in particular, and the holy ark is regarded as the visible representative of the respective patron. Without this *talot* the church is not Christian, and heretics alone doubt of its wonderful virtues and inherent power. Prayers and vows are offered to the box, and the kiss of adoration is held sufficient to bring down the desirable blessing. The ark of St. Michael accompanies all military expeditions to ensure success against the Galla, and that of Tekla Haimanot stands the palladium of the North, to preserve the empire from the attacks of the Mahomedan prince of Argobba.

Like the Pagans of ancient and modern times, who placed between the most High God and themselves a species of inferior deity, the Abyssinians observe this species of idolatry, although the names of their tutelary spirits have been changed. St. Michael and the Holy Virgin are here venerated as in no other country of the world ; the former as the martial leader of all the choirs of angels, the latter as chieftainess of all the saints, and queen of heaven and of earth. Both are considered as the great intercessors for mankind, and the prayer arises to their name, and the honor is ascribed to their memory, which belongeth only to the one Eternal.

The detrimental influence of this superstition is fully exemplified in the conduct of the nation. The mediator is ever employed when individual courage fails in impudent assurance or insatiable beggary. Time is uselessly wasted in importunity, which all believe must in the end prove successful, and the practice of invocation and intercession thus exerts the most baneful tendency even upon the daily dealing of life.

Like the Jews of old, the Abyssinians weep and lament on all occasions of death, and the shriek ascends to the sky, as if the soul could be again recalled from the world of spirits. The hired mourner of the Israelites raised the piteous wail. Here the friends and relatives of the departed assemble for the same purpose, and the absence of any from the scene is ascribed to want of love and affection. As with the Jews, the most inferior garments are employed as the weeds of woe, and the

skin, torn and scarified from the temples, proclaims the plunge into the last extremity of grief.

In later days, the extravagance of mourning has been somewhat moderated through the agency of a priest of the church of St. George, who stood boldly forward to arrest a practice equally at variance with the sacred books of the country, and with the spirit of the New Testament. Excommunication thundered her wrath upon all who should thenceforth indulge in the luxury of woe, and the people trembled under the ban of the Church. The death of a great governor soon confirmed the restriction. Loved and esteemed by all classes, the prohibition was severely felt. The complaint of lamentation was referred to the throne, and as the deceased was a man of rank and a royal favorite with all, the clergy were commanded to grant absolution in this one instance. But Zeddoo, the stout-hearted priest arose and declared, that he had no respect for persons, and the words of truth must be defended to the death. The silence of the monarch enforced the ecclesiastical fiat, and to this day the drum is mute at the funeral wake, and customary praise of the deceased is heard no more in the public resorts of the capital.

On the annual day of atonement, the Jews were obliged to confess their sins before a priest. In like manner, the Abyssinians are commanded from time to time to perform the ceremony during the great fast of *Hodada* more particularly, and on Good Friday, the day of the Jewish expiation; and as the slave in token of his freedom and dismissal received the blow from the Roman proctor, so the penitent on absolution, receives the stroke over the shoulders from the branch of the *woira* tree, as a sign of his deliverance from sin and Satan.

Murder and sacrilege ought to be immediately revealed to the officiating priest, and a particular confession of all crimes is enjoined once before death. The father-confessor is bound to the strictest secrecy, and it is believed, that on this point a dreadful oath is taken before ordination, when the mysteries of religion are explained by the *Abuna*, and especially those which have reference to the preparation of bread for the Holy Supper. In a small house styled Bethlehem, which rises immediately behind every church, the mysterious ceremony is performed. The deacon can alone bake the cake, and the most vigilant guard is invariably preserved against the approach or intrusion of females, or other improper visitors during the hours of solemn preparation.

The Jewish temple consisted of three distinct divisions ; the fore Court, the Holy, and the Holy of Holies. To the first, laymen were admitted, to the second only the priest, and to the third the High-priest alone. All entrance was denied to the Pagan, a custom which is still enforced in Abyssinia, and her churches are in a like manner divided into three parts.

“Keunic Maalt” is the first enclosure to which all laymen have access, and wherein the priests and *defteras* perform Divine service by singing, dancing, and drumming. “Mukdas” is the second, a corner of which is set apart for laymen during the administration of the Holy Supper, whilst a cloth screens the mysteries of the interior. Here also hang arranged around the walls, the bones of many deceased worthies which have been carefully gathered from the newly opened sepulchre, and are deposited by the hand of the priest in cotton bags. By the nearest relative the first opportunity is embraced of transporting these mouldering emblems of mortality to the sacred resting place of Debra Lebanos, where the living and the dead are alike blessed with a rich treasure of righteousness, since the remains of Tekla Haiman, the patron saint of Abyssinia, still throw over the scene of his miracles upon earth, a bright halo of holiness.

“To Kuddist,” the Holy of Holies, none but priests are admitted. Behind its veil, the Sacrament is consecrated, and the tremendous mysteries of the ark are shrouded from the eyes of the uninitiated. Prayers, vows, and offerings are daily made to this idol sitting in the centre of the Abyssinian church, and the handiwork of some vain ecclesiastic is held up to the admiring multitude as the true ark of holiness, which secreted in a cave during the inroad of the conquering Graigne, has been discovered by a miraculous dream from heaven. Even unto this day the spoils of the temple of Jerusalem are supposed to remain a blessing to the land, and old and young, rich and poor, bow the knees as to the Omnipotent Creator, before a round wooden box which contains nought save the name of the patron saint of the Church.

But among the ignorant mass, the mystery is carefully preserved. The priest who dared open the lip to his countrymen regarding the contents of the casket, would suffer the heavy penalties due to sacrilege ; and although the gold of the foreigner has penetrated the secret of its interior, the dense fog of superstition will long obscure the

disgraceful idolatry from the confined understanding of the bigotted son of Shoa.

Like the Jews, the Abyssinians, although objecting to sculpture, ornament their churches with paintings, and kiss and pay the miserable daub every religious respect. The vow is offered as of old to the temple of Jerusalem, and oil and frankincense, shields and spears, cloths and money, are offered according to the worldly substance of the pious and superstitious donor.

The sweet singer of Israel danced and jumped before the Lord, and a vile caricature imitation remains the chief point of Abyssinian worship. Capering and beating the ground with their feet, whilst stretching their crutches towards each other with frantic gesticulations, the performers rather resemble lunatics than holy priests, and the clash of the timbrel, the sound of the drum, and the howling of harsh voices, complete a most strange form of devotion.

Like the Jews, the Abyssinians invariably commence the service with the Trisagion, and the morning lesson is performed with the same careless and irreverent demeanor for which the Hebrews were latterly blamed. The lessons are taken partly from the Scriptures, and partly from the miracles of the Holy Virgin, and of Tekla Haimanot, the life of St. George, and other foolish and fabulous works ; but all are in the ancient Ethiopian language, which to the congregation is a dead letter ; and the sole edification of a visit to the church is comprised in the kiss that is imprinted on the portal.

Pride, hypocrisy, and contempt of other nations are strangely at variance with the absurd imitations of customs and manners, which the Abyssinians have adopted from all. The Jews also hated the Heathen bitterly, styling them " dogs," and rejected of God : whilst notwithstanding their contempt and pride of holiness, they willingly received many of their superstitious practices. The Abyssinian will not eat with the Galla or the Mahomedan, lest he should thereby participate in the delusion of his creed ; and the church and the church-yard are equally closed against all who commit this deadly sin. But the order of separation was applicable so long only as the knowledge of the one true God was restricted to a single nation ; and the prominent principle of Christianity, that the light of the true faith should shine before all men, and be no longer concealed under a bushel, is here neither understood nor regarded.

The Abyssinians have also fully adopted the same spirit of merciless destruction, which impelled the Israelites to destroy their enemies from the face of the earth; considering themselves the lineal descendants of those heroes of ancient history, who were arrayed against the enemies of the Lord, they are actuated by the same motives and feelings which led the hand of Judah to the massacre. The foe is a Pagan who does not fast, nor kiss the church, nor wear a watch. All feelings of humanity are thrown to the winds, and a high reward in Heaven awaits the king and the blood-thirsty soldier for the burning of the hamlet, the capture of the property, and the murder of the accursed Heathen; self-interest rarely interferes in the tragedy of blood, and the captive is seldom secure even for the sake of the forthcoming ransom, or to pass the residue of miserable existence, a drudge in the household of the spoiler. The words of absolution from the mouth of the royal priest usher in the ruthless slaughter, and the name of the most high God is wantonly employed to consecrate the ensuing scenes of savage barbarity.

Abyssinia in her present state, belongs altogether to the ancient world. The pure principles of Christianity exist not in the land, and there remains not one solitary hope, that in her degraded condition she can tend, in any way to lift the curtain of moral darkness which hangs over the interior of the African continent; nor, redolent of evil principles and practice, is it to be desired, that she should be permitted to exert any important influence over the surrounding tribes.

The instruction gained from her teaching would prove small indeed, and the advance would be but trifling, from the state of heathenish superstition in which all are plunged alike.

The bigotry of ages is confirmed by the self-pride and the excessive ignorance of the present race; and on the rising, or on the unborn generation, rests the sole hope for the moral resurrection of the people.

But years must necessarily elapse before the folly and the falsehood of the nation can be successfully combated, ere the errors of her impure creed can be plucked out by the root, and the pure light of Christianity be introduced even by the most zealous and ardent messenger of the true Gospel.

(Signed) D. C. GRAHAM, *Captain,*
Principal Assistant to the Embassy.

The Abyssinian Church.

Christianity is the national religion over the more elevated portions of Abyssinia, but the wild Galla has overrun her fairest provinces, and located himself in her most pleasant places. The bigotted Moslem crowds thick upon the skirts of her distracted empire, and the tenets she professes, are base, foolish, and degrading, engrafted on the superstitions of the Jew, the Mahomedan and the Pagan; promulgated by men, rude, ignorant and uninstructed, and received by a people emerging into the first stage of civilization. The light of religion must have been feeble even in the beginning, but as it was imparted, so it still remains. Sects and parties have arisen, and province has been banded against province in all the fiery wrath of the zealot; but lost in the maze of subtle controversy, these internal wars have raged for generations without disturbing the original doctrine, and the same errors of the Church prevail to this day throughout the land, as when first propounded in the beginning of the fourth century.

But the nation has not alone been called upon to sustain internal commotion, together with the fierce assaults of the heathen and of the fanatic followers of the false prophet. The measure of her oppression was not filled until the bitter cup had been drained, and deeply drained, of the converting zeal of European priesthood, until the usual horrors attendant upon religious war had been painfully undergone, and the requisite sacrifice of the life-stream of her children had been unsparingly poured out, when nearest and dearest relatives rallied under opposite standards, and when the same cry of destruction rung from either host—the glory of the true faith.

The glowing zeal of the Jesuit has seldom been displayed in more glaring colors, or in more decided defeat, than in the attempts so perseveringly made by that dread society to draw within the meshes of her encircling net, the remote church of Ethiopia. And although the means employed are to be justly condemned, still that ardour must be the theme of the high praise of all, which impelled old men and young to dare the difficulties and dangers of a rude uncivilized land, with exposure to the prejudices of a people, as bigotted as themselves in the cause of their religion.

But the wily system of establishing rival orders and monasteries, of mortification, of snapping asunder domestic ties, and of collecting toge-

ther bands of discontented enthusiasts, well served the interests of the Catholic faith ; and there were always to be found servants obedient to bear instructions to the farthest corners of the earth ; men who relinquished few comforts or enjoyments on quitting their austere cells, who were prepared at all hazards and in all manners to carry into execution the will of their superiors, and who gloried in the prospect either of erecting an eternal fabric in honor of their faith and their own peculiar order, or of obtaining the equally bright crown of martyrdom.

But the custom of ages had struck too deep into the heart of the Abyssinian.

The power of the officiating clergy was paramount in the land. All the passions and the prejudices of the multitude were too firmly enlisted in the cause of ancient belief ; and degraded as was the Christianity of the country, its forms and tenets were not more absurd and not less pertinaciously supported, than those innovations of the Roman faith, which were so fiercely, though so ineffectually attempted.

The soft wily speech and the thunder of excommunication were alike disregarded. Treachery and force were both tried, and found equally unavailing. Blood flowed for a season like the swollen torrent, and the sound of wailing was heard from the palace to the peasant's hut ; but the storm expended itself and finally passed away, and after the struggle of a century, the discomfited monks relinquished their attempts upon the church of the monophysite, without leaving behind one solitary convert to their faith, and bearing along with them the loud maledictions of the much-injured nation upon the head of the intruding and officious European.

Abyssinia has not, however, always displayed that firmness of purpose, and that stoutness of heart to do battle for her existing creed. Bowing her neck in olden time to the yoke of Judaism, she now in many localities basely truckles, as convenient opportunity offers, to the tenets of the Islam faith.

The date of her embracing a portion of the Jewish creed is lost in the obscurity of ages. Some of her sons, who love even the notoriety of doubtful fame, glorying in an origin from Menelek, the son of Solomon and the Queen of Sheba, relate the most ridiculous exploits of these their venerated ancestors, who crowned a long course of iniquity by plundering the temple of Jerusalem, and carrying off the spoil and the

holy books into Ethiopia; whilst others trace the legend of emigration to the period of the destruction of Jerusalem by the Romans. But whatever be the true date of their arrival, it is certain that the Hebrews have exercised a much greater influence upon the affairs of this country than in any other since the day of their dispersion; and although the taint of their religion was abjured by the nation on the Promethean touch of the true Gospel, the children of Israel, moulding a portion of their worship on the formula of the Christian faith, and esteemed as sorcerers and cunning artists in the land, found a safe asylum among the mountains, and exist to the present day here, as elsewhere, a separate and peculiar nation,

In the year 330, after the birth of our Saviour, Meropius, a merchant of Tyre, during a commercial voyage to India, landed on the coast of Ethiopia, where he was murdered by the barbarians, and his two sons, Fumentius and Edesius, both devout men, falling into the hands of the savage inhabitants, were made prisoners, and carried as slaves before the Emperor. The abilities, the information, and the peaceable demeanor of the brothers, soon gained not only their release, but high office in the court, and living in the full confidence of the monarch until his decease, and subsequently under the protection of the Queen mother, the good will of the entire nation quickly succeeded. The work of conversion was commenced, and proceeded with wonderful rapidity and success; a thriving branch was shortly added to the great Eastern Church.

Bearing the happy tidings, Frumentius appeared in Alexandria, and was received with open arms by the Patriarch Athanasius. Loaded with honors and consecrated the first Bishop of Ethiopia, a relation was thus happily commenced with Egypt, which has remained firm and friendly to the present day; and throughout fifteen centuries has bestowed upon a captive priest the high office of Patriarch Abuna of the Ethiopian church.

On his return to the country of his hopes, Frumentius found that the spark of life had spread rapidly throughout the gloomy darkness of the land. Baptism was instituted, Deacons and Presbyters appointed, churches erected, and a firm foundation laid, whereon to establish the Christian religion in Abyssinia. Frumentius was deservedly honored with a favored niche in the annals of her Church History, under the

title of Salama, which formed the subject of high praise to all the sacred poets of Ethiopia.

“ Hail him with the voice of
Joy, sing praise to Salama,
The doors of pity, and of mercy
And of pleasant grace ; Salute
Those blessed hands, bearing the
Pure torch of the Gospel.
For the splendour of Christ's Church
Has enlightened our darkness.”

During the succeeding century, priests and apostles, men of wonderful sanctity, flocked into the empire from all parts of the East, and miracles the most stupendous are related in the legends of those days. Mountains were removed, and the storms of the angry ocean stilled by the mere application of the staff. The adder and the basilisk glided harmlessly under foot ; and rivers stayed their roaring torrent, that the sandal of the holy man should remain unstained by the flood. Aragainc raised the dead ; the fingers of Likands flamed like tapers of fire ; Samuel rode upon his lion, and thus the kingdom of Arwe, the old serpent of Ethiopia, was utterly overthrown, destroyed, and annihilated.

The Abyssinians now rose to the scale of subtle casuists and disputants. Abstruse doctrines were propounded, and speculative theories largely indulged in, and the sun of existence set upon the generation ere the knotty points had been satisfactorily determined of how long Adam remained in Paradise before his Fall ? And whether in his present state he hold dominion over the angels ?

In the year 481, the celebrated council of Chalcedom, lighted up the torch of misunderstanding regarding the two natures of Christ. The Eastern church split and separated in mortal feud, and the Saracen pounced upon Egypt, rent and wasted by discord and distraction. The Abyssinians denouncing the Council as a meeting of fools, concurred in the opinion of the Alexandrian Patriarch.

The faith of the Monophysite was declared to be the one only true and orthodox, and the banished Dioscorus received all the honors of a martyr.

“ The Kings of the earth divided the unity of God and man.
Sing praises to the martyr, who laughed their religion to scorn.
He was treated with indignity, they plucked out his flowing beard ;
Yea, and tore the teeth from his venerable face. But in heaven a halo of honor
shall encircle Dioscorus.”

The successor of St. Mark, however, could barely retain his own existence in Egypt during the succeeding oppressions and exactions of the Moslem; and Ethiopia, his remote charge, now nearly isolated from the remainder of the world, remained for the next ten centuries a sealed book to European history, preserving her independence from all foreign yoke, and guarding in safety the flame of that faith which she had inherited from her fathers.

The reign of the Ascetics succeeded to that of disputation, and men lacerated their bodies, and lived in holes and caves of the earth like wild beasts. Tekla Haimanot and Eustathios were the great founders of monkery in the land. An angel announced the birth of one, and the other floated over the sea, borne in safety amidst the folds of his leathern garment. Miracles still continued to be occasionally performed. Sanctity was further enhanced by mortification of the flesh, and austerity of life was highly praised and followed by the admiring mob.

The original discipline of the anchorite was severe in the extreme. It was to be continually girt round the loins with heavy chains, and to remain for days immersed in the cold mountain stream, to recline upon the bare earth, and to subsist alone upon a scanty vegetable diet.

Monasteries were at length founded, and fields and revenues set apart for the convenience of their inmates; and although a visiting superior was appointed to check corruption and punish innovation or transgression, the asperities of the monastic life gradually softened down. The *cheggue* preferred the comforts of a settled abode to wearisome tours and visitations; further immunities were granted to all loving a life of ease and spiritual license, and the commonwealth deplored the loss of a great portion of her subjects, who assisted her neither in taxes, nor in military service.

Ethiopia meanwhile extended her wide empire on every side, and her religion was imposed upon the conquered territories. From the great river Gochoh to the frontiers of Nubia, the crutch and the cross pervaded the land. Churches were erected on every convenient spot, and the blue badge of nominal Christianity encircled the necks of an ignorant multitude. The usual wars and rebellion arose, and schisms and sects fill up the archives of ten centuries, with all the uninteresting precision of more civilized countries. But still the Church flourished; the Patriarch was regularly received from Alexandria, a long list of ninety-five

Abunas flows quietly through the dull pages of Abyssinian record, from the time of Frumentius the First until the days of the venerable Simeon, who whilst gallantly defending the faith of his fathers, was barbarously murdered by the European partizans of the Italian Jesuit. It was not until the commencement of the sixteenth century, that any further mention was made of the Abyssinian Church, which during the darkness of the middle ages had fallen into complete oblivion; but rumours about that period were whispered abroad of a Christian monarch and a Christian nation established in the centre of Africa, and the happy news was first brought to the court of Portugal, that a Christian Church still existed, which had for ages successfully resisted, among the lofty mountains of Abyssinia, the fierce attacks of the sanguinary Saracen.

In the year 1499, Pedro Cavilham succeeded in reaching Shoa, where he was received with that favor which novelty usually secures; and although the stranger was prevented by the ancient laws of the kingdom from leaving the land, the quest had been successfully performed; the first link re-established of a chain, which had been broken for ages, and shortly afterwards the glories of Prester John and his Christian court were fully disclosed to abate the intense anxiety that reigned in the heart of every inhabitant of the West.

In due time, an Abyssinian ambassador made his appearance in Portugal; unbounded delight was experienced by king Emanuel and his court, and every honor was lavished upon Matthew, the merchant of Shoa. All believed that the Abyssinians were devout Catholics, and that a vast empire, estimated at four times its actual extent, was about to fall under the dominion of the Roman Church. A mission on a great scale was fitted out, the journey was safely accomplished, and excited fancy rioted for a time in the description of palaces and fountains which never existed, and pomp, riches, and regal power utterly unknown in the land.

Missions continued from either court during the succeeding forty years. An alliance was formed. Men learned in the arts and sciences were despatched to settle in Abyssinia. Zaga Zaba arrived in Lisbon, invested with full powers to satisfy the interests of both countries, temporal as well as spiritual. But the difference of faith was now for the first time understood. The bitter enmity of the Roman creed stood prominently to view, and the envoy, after studying the details of the

Catholic doctrine, and refusing to subscribe a similar contract on behalf of his Church, was unscrupulously put to a violent death in a Portuguese prison.

The first flattering ideas regarding the religion of the country being thus found erroneous, the delusion respecting the extent and power of the mighty empire was next to fall to the ground. The Galla were now streaming in hordes from the interior, and Graigne, the Mahomedan invader, carrying fire and sword with his army throughout the country. The dying Coptish Patriarch of Abyssinia was prevailed upon to nominate as his successor John Bermudez, a resident Portuguese, and the Romish priest, hurried by the king, proceeded to seek immediate military assistance from the courts of Rome and Lisbon.

Schemes of ambition flitted over the minds of the first conquerors of India, and an alliance with Ethiopia seemed highly desirable, as a handle for further acquisition in the East. But dilatory measures delayed the arrival of the Portuguese fleet until the sueing monarch had been gathered to his fathers, and Christopher, the son of the famous Vasco de Gama anchored in the harbour of Massowah, at a time when the new emperor Claudius was sorely pressed to sustain himself upon the throne of his ancestors. The opportunity was not neglected by the Archbishop to reduce the heretic church to the fold of the Roman see; and a series of attempts were commenced, equally to be deplored, from the mischief which they created, and the unworthy means that were employed during the struggle.

The signal service rendered by the Portuguese troops during the ensuing wars, the total route of the Galla and Moslem, with the slaughter of their invading leader in the battle, placed Bermudez in a position to demand high terms from the re-instated monarch. The conversion of the emperor to the Roman Catholic faith, and the possession of one-third of the kingdom were imperiously proposed, and scornfully rejected. Excommunication was threatened by the proud prelate of the West, and utterly disregarded by king Claudius, who retorted, that the Pope himself was a heretic. Open hostilities broke out, and although the superior discipline of the Europeans for a time gave them the advantage, they were at length separated by a wily stratagem, and hurried to different quarters of the kingdom, and Bermudez being then seized, was conveyed in honorable exile to the rugged mountains of Efat.

Although much blood and considerable treasure had been thus fruitlessly expended, the conversion of Ethiopia was far from being forgotten in Europe, and the spark of hope was further kept alive by an Abyssinian priest, who asserted on his arrival in Rome, that the failure of Bermudez had entirely arisen from his own absurd and brutal conduct, and that the utmost deference would be paid to men of sense and capacity. Ignatius Loyola volunteered to repair in person to re-unite Ethiopia and the Roman Catholic church, but his talents being required for more important objects, the Pope refused the desired permission to the great founder of the Society of Jesus, and thirteen Missionaries from the new order were chosen instead. Nunez Baretto was elevated to the dignity of Patriarch, and Andre Oviedo appointed provisional successor.

At that period, the navigation of the Red Sea was rendered dangerous by numerous Saracen fleets, and the Patriarch deeming it inexpedient to hazard his own valuable person in the perils of the voyage, reposed quietly at Goa; whilst a deputation, headed by Gonsalvez Rodrigues, a priest of the secondary rank, was despatched in advance to ascertain the capabilities of the route, and the sentiments of the reigning monarch.

The Emperor Claudius little relished the arrival of these monks, and Rodrigues entirely failed in every attempt at conviction on the points at issue—that the Pope, as representative of Christ upon earth, was the true head of all Christians, and that there was no salvation whatever out of the pale of the Catholic Church; he was dismissed with the reply, that the people of Ethiopia would not lightly abandon the faith of their forefathers. The monk retired to work upon the mind of the monarch by the brilliancy of his controversial writing, but a lengthy treatise on the true faith produced no happy result, and the envoy, disgusted with his reception, returned shortly afterwards to Goa.

The spiritual conclave was plunged into consternation by the unhappy intelligence, and after much mature deliberation it was resolved, that the dignity of the Patriarch and of the great king of Portugal could not be exposed to the consequences attending the ill favor of the Emperor of Abyssinia, that therefore the prelate should still remain the guest of the Bishop of Nicaca; whilst the daring and restless Oviedo, with a small train of attendants, attempted the conquest.

Arriving in safety, the Jesuit experienced a most friendly reception from the Emperor Claudius, and although the letters of recommendation

from the Pope were received with mistrust and impatience, the habitual mildness of the monarch restrained him from any overt act of oppression. Deceived by this calm behaviour during a second audience, the Bishop was sufficiently fool-hardy to represent, in the most insolent language, the enormous errors under which the Emperor laboured, and to demand imperatively, whether or not he intended to submit himself to the authority of the successor of St. Peter, and thus remove the heavy obligation under which his empire already groaned? King Claudius replied, that he was well inclined towards the Portuguese nation; that he would grant them lands and settlements in his country; that permission would not be withheld to the private exercise of the religion of the West; but that as the Abyssinian Church had been for ages united to the charge of the Patriarch of Alexandria, a subject of such serious alteration must be canvassed before a full assembly of divines.

Indignant at what he termed Ethiopian perfidy, but still buoyed up with the faint hope of realizing his object, Oviedo changed his mode of attack, and addressed a laboured remonstrance to the monarch, written in the hypocritical tone of false friendship; earnestly entreating him to recall to his remembrance the assistance rendered by Europeans to his afflicted country, and the many promises made by his sire in the day of his urgent distress, imploring him at the same time to preserve a stern vigilance upon the evil influence of the empress, and of the ministers of state; for in matters of faith, the love of kindred must give away to the love of Christ, and in similar situations, the nearest relation often proves the bitterest enemy to the salvation of the soul.

This insidious reasoning was, however, vainly expended upon the intelligent Claudius, and served but to turn his heart further from the Roman and his cause. The offer of a public controversy on points of disputed faith being shortly afterwards accepted, the emperor entered the lists in presence of the assembled court, and utterly defeated the subtleties of the Italian priest by his clear knowledge of the Holy Scriptures; and thus, notwithstanding the conviction of the Portuguese Missionary, that by supernatural aid he had triumphantly refuted all the arguments urged by his illustrious antagonist, it was fully decreed by the Abyssinian conference, that neither king nor people, owed obligation or obedience whatsoever to the Church of Rome.

Still Oviedo was by no means reduced to silence. Treatise after treatise was published on the controversy, to confound the minds of the Ethiopians. The errors of the Alexandrian faith were fiercely attacked in every form and fashion, and the superior beauties of the Catholic religion fully expounded. But no advantage resulted, rejoinders and confutations followed fast from the insulted clergy, and the Bishop furious at the thoughts of his futile exertions to gain a footing in the country, entertaining no hope of making one single convert, whether among prince or people; resolved upon a last effort in the struggle, and on the fifth of February 1559, he issued his spiritual ban over the land, proclaiming that the entire nation of Abyssinia, high and low, learned and ignorant, having refused to obey the Church of Rome, practising the unholy rite of circumcision, objecting to eat the flesh of the hog and the hare, and indulging in many other flagrant enormities, were delivered over to the judgment of the spiritual courts, to be punished in persons and goods, in public and in private, by every means the faithful could devise.

The folly of issuing this curious rescript without any means of enforcement was fully appreciated, and the tyrannical conduct of the Bishop only served to strengthen the emperor in the bands of his own faith; finding, as was observed by an historian of the times, that Popery and its wiles were the more dangerous and reprehensible, as the veil was withdrawn from the spirit of her tenets.

There is every reason to believe, that the succeeding invasion of the Adaiel was procured through the treacherous designs of the Jesuits, but the event again proved disastrous to their cause. Although the revenge of the baffled Bishop was allayed in a torrent of blood, yet the death of the mild, moderate and liberal Claudius, who perished in the field of battle, shed a baneful influence on the ensuing efforts, and the sceptre devolved into the hands of his brother Adam, a haughty and vindictive prince, who is depicted in Portuguese records as cruel and hard of heart, and utterly insensible to the beautiful mysteries of the Catholic faith.

Swearing vengeance against the Latins, to whose treason he attributed the murder of his brother and the ruin of his country, the new monarch seized all the estates which had been granted to the Portuguese for rendered service; threatened the Bishop and his colleagues with instant death if they presumed to propagate the errors of the Romish

Church, and on a humble remonstrance being attempted, in the violence of his wrath he rushed upon the Missionary with drawn sword, vowing to immolate him on the spot. The weapon, however, say the holy fathers, dropped miraculously from his impious hand, and for a season the last extremity of vengeance was exchanged for a system of vile durance.

Portuguese troops in the mean time arrived from Goa, and the Bharnegash, the lord of the sea coast, bought over by the gold of India, and stirred up by the wily emissaries of the viceroy, assembled his forces in rebellion, and marching with his European allies to the capital, defeated and slew the emperor in a pitched battle, and rescued the Jesuit missionaries from their unpleasant captivity.

Warned by former difficulty and distress, the worthy fathers now assumed a more modest and humble demeanor, and were allowed to settle again in their old haunt of Maignagna, where they remained for a time unmolested by the new emperor, Malac Sarshed, who inherited all the horror of his father to the Catholic creed, although tempered by the mildness of his uncle Claudius. But the jealous monks had not yet relinquished their hope of advancement, and bending to the pressure of the times, the deep plot was veiled under the garb of passive obedience. The most pressing solicitations were dispatched to Goa for assistance, and the dauntless Oviedo pledged himself, with six hundred staunch Europeans, to convert not only the empire of Abyssinia, but all the adjacent countries.

The scheme, however, did not suit the politics of the day, and in 1560, the Bishop received an order from the head of his Society, to repair forthwith to his more promising charge in Japan; loath to abandon all his favorite projects of ambition in the country, and utterly reckless of truth, he addressed the most specious letters to the Pope, holding out a certain prospect of prostrating the Church of Ethiopia before the Apostolic throne; whilst to his immediate superior, he dilated upon the richness of the land and the mines of pure gold, which he falsely asserted to exist in every province of the kingdom. But his artful motives were thoroughly pierced by the more wily successor of St. Peter, and vessels soon after arrived on the coast of Africa, to convey the reluctant fathers to the Monastery of St. Xavier in Goa.

(Signed) D. C. GRAHAM, Captain,
Principal Assistant to the Embassy.

History of the Abyssinian Church.—Continued.

Miserable indeed appeared the chance of conversion, and after a fierce struggle of thirty years, there remained not one priest of the Romish faith, to administer the Sacraments to the numerous European settlers and descendants in the country. Even the Jesuits themselves lost heart for the time; but the zeal of Philip the Second stirred the dying embers, and fresh candidates for strife, honor, and martyrdom, were soon in the field.

Peter Pero Pays and Antonio de Mantzerado, disguised as Armenian merchants, first attempted the perilous quest, but being wrecked on the Arabian coast, they were recognized as Christian ministers, and languished during seven years in a Moslem dungeon.

Goa next poured forth her priests to the ineffectual contest in seeking the promised land. Abraham de Georgis was discovered in Turkish garb on the island of Massawah, and the governor swore by the Holy Prophet, that since the Kafir had donned the attire of the true believer, he should also adopt the tenets of the true faith, or die the death of a dog. But the Jesuit clung to his creed and suffered accordingly, and shortly afterwards Jean Baptiste being detected in the assumed costume by the Turks of Commera, he also shared the same fate as his immediate predecessor in the thorny path of martyrdom.

Thus even the road itself seemed to close, and all intercourse was denied with a country, wherein the presence of Europeans was neither sought for nor desired; and which would have been suffered to remain unmolested, had not ideas been inflamed by the exaggerated accounts of its wealth, that still pervaded the imagination of all classes throughout the Western world.

Don Alexis de Menezes, the zealous Archbishop of Goa, who had already with fire and sword propagated Christianity in all Malabar, now entered the lists, and his sagacious and discerning mind selected the vicar of St. Anne as a fit tool for the execution of his project. Melchior Silva, a converted Brahmin, might from his colour and language pass through the Turkish wicket; his zeal was great as that of his superior, and the valuable presents whereof he was made the bearer, might prove a bait sufficiently tempting to lure the simple Abyssinian into a fresh connexion.

The intelligence of his safe arrival, and of the gracious reception of the presents again roused the ardent spirit of the order of Jesus, and Peter Pays was quickly ransomed from the Arabs, and despatched with a full train of priests to Ethiopia, where he arrived in September of the year 1603.

Superior in every respect to his predecessors, this Missionary instead of attempting to carry his measures by force and overbearing insolence, sought the softer path of insinuation ; and whilst his extensive knowledge and plausible address proved strong recommendations in his favor, many circumstances also conspired to forward his views. The country was in a most unsettled state, and the assistance of a few Portuguese troops could turn the scale of war. The condition of the Church was low and miserable. Eight years of incessant strife and distraction had crushed the very name of learning and literature. Few persons were to be found, who could read, write, or dispute. Ignorant and unworthy men filled every sacred office, and the ancient stout defenders of the Alexandrian faith, had been swept away on the battle field.

Amidst wars and rumours of wars, Peter quietly settled with his followers at Malignagna. Schools were opened, and the wonder ran through the land, that youths of tender age could refute the most learned sages of the wilderness of Walpayet. The curiosity of Za Denghel, the temporary occupant of the throne was excited, and Peter with his crude pupils was summoned to the court.

Prompted by the hope of obtaining assistance from Portugal, this weak prince, under an oath of secrecy, immediately embraced the religion of his guest. But his time was fully occupied in the more worldly object of strengthening himself upon a throne, to which he had been elevated by his evil genius, and the falling away from the faith of his forefathers being at length whispered abroad, a rebellion broke over his devoted head.

The approaching storm having been perceived by the monk, he withdrew from court before the burst of a revolution, which for some time crushed his every hope of success. The emperor was slain, new aspirants strove for the ascendancy, and war reigned for a season throughout the entire land.

Confident in the near approach of the Portuguese troops which had been requested when Sylva carried to India the tidings of the first conversion ;

Peter now resolved upon the bold game of espousing the weaker party, and thus gaining a firmer hold in the event of success. The expected reinforcements did not however arrive in time, and the defeat and death of his *protegé* was followed by the advancement of the pretender Sunscus to the throne of the empire.

Notwithstanding his appearance as a declared partizan in the opposing ranks, Peter's abilities as an architect now created a fresh diversion in his favor. The novel idea of a two-storied edifice engrossed the thoughts of the reigning king, and men flocked from the remotest parts of the country to gaze upon a fabric of stone, which was considered to be one of the wonders of the world.

A Missionary possessing the varied abilities and acquirements of Pays, could not be long in gaining ascendancy over a rude and illiterate monarch, and by address and perseverance, he had soon effected that which the threats and violence of his predecessors had vainly attempted during a long course of years.

Ras Cella Christoo, brother to the emperor, was the first fruit of the harvest. Partaking of the Holy Supper with the Latins, he publicly embraced their religion, and many chiefs and nobles followed his illustrious example. Crowded assemblies were held, in which the eloquence of the Jesuit entirely bore done the feeble efforts of the ignorant and uncultivated natives. The holiness of life, which was strictly preserved among the neophytes of the Catholics, added to the impression entertained of their wisdom, and the introduction of useful arts, raised the glory of the fathers still higher in the land, and the prospect of the aid of disciplined soldiers from the West overturned the last remaining scruple in the mind of the monarch.

An edict was published, interdicting all persons from holding office, who were not well inclined towards the Latin religion, and severe punishments were threatened for the promulgation of ancient doctrines. Assistance was solicited from Rome and Lisbon, and the work of European persecution favorably commenced by scourging with whips, all those stubborn monks who refused to forego their ancient belief.

Abba Simeon, the Abuna, repaired to the court to remonstrate with the emperor on the scandalous interference with his prerogatives in convening meetings and authorizing debates upon ecclesiastical matters; but his pride was timely soothed by the royal assurance, that all had been

undertaken for the benefit of true religion, and that the subject should be fully discussed in his own presence. Again the subtleties and dialectics of the Missionaries prevailed, and the total defeat of the Abuna and his clergy was followed by a second and more severe ordinance, awarding the penalty of death to all who should henceforth deny the two natures of Christ.

Wonderful was the sensation created by this severe edict, so diametrically at variance with the mild spirit of religion, and with all the ancient usages of the land. Aware of the feelings of the strong party at court, as well as of the entire body of the people, the Abuna placarded on the doors of the chapel an excommunication to all who should accept the religion of the Franks, and the monarch irritated by this resistance, published a manifesto, that his subjects should forthwith embrace the Catholic faith.

This served as the signal trumpet for the fight. All classes armed themselves in defence of their religion, and Aclius, the king's son-in-law, placed himself at the head of the malcontents in Tigre.

Not yet thoroughly prepared for the struggle, the emperor found it convenient for a time to temporize, and requested one further debate, which was to prove final between the disputants. The mild Abuna listened to the proposal, and accompanied by a large train of monks appeared in the royal camp, whilst the Jesuit and his colleagues advanced into the arena from the opposite side. The controversy was renewed, and raged fiercely for six days; but disputes in religion cannot be adjusted by the reasoning of doctors, and the parties withdrew mutually incensed against each other.

One further effort was made to restore the disturbed harmony. The empress Hamilmala, and many of the courtiers, with tears implored the king to desist from his undertaking; and the Patriarch and the clergy throwing themselves prostrate on the earth, embraced his knees, and entreated him to turn a deaf ear to the poisonous insinuations of the deceitful Jesuits, and graciously to allow his subjects to remain faithful to the religion of their forefathers; but the heart of the monarch remained closed to the prayer. The Abuna quitted the court, plunged in the deepest distress, and a bloody war ensued, which shook the empire to its foundation.

When Aclius fully understood the last resolution taken by his father-in-law to defend the Catholics and their religion, he publicly appealed

to the people of Tigre, and proclaimed that all who were disposed to embrace the Jesuitical faith might repair to the deluded emperor ; whilst those who held to the ancient belief, should forthwith gather under his standard ; and finding himself shortly afterwards at the head of a large army, he marched towards the royal camp, resolved to establish the ancient doctrine of the land, or to perish in the attempt.

The Abuna Simeon, who had attained the venerable age of one hundred years, joined the army of the defenders of the Alexandrian faith, and in giving his Patriarchal blessing assured the soldiery, that all who should fall in the combat died the death of a martyr, and would receive their reward in heaven. The desired effect was produced, and the hearts of the entire force burned with one eager zeal to meet the accursed enemies of their religion.

On the appearance of the inflamed force, a reconciliation was attempted, and the daughter of the emperor was made the bearer of terms to her rebel lord. Her tears and entreaties were however totally disregarded. The impetuous youth prepared for instant attack, and the princess had barely time to regain her father's tent, when hostilities were commenced.

The soldiers of the viceroy rushed furiously upon the royal encampment, and Aclius succeeded in forcing his way, at the head of a small body of troops, to the very pavilion of his father-in-law. But he was here struck from his horse by a stone, and stumbled upon the ground. A panic seized the army of the fallen leader, and the rabble casting away their arms, fled in all directions.

The aged Abuna found himself alone and deserted in the same spot which he had occupied during the attack. His years and high clerical learning disarmed the violence of the Abyssinian soldiery, but a Portuguese partizan at length threw himself upon the Patriarch, and regardless of his white and venerable hairs, transfixed him with a spear. A frightful massacre ensued, and the heads of the principal leaders of the unsuccessful rebellion were exposed on the gates of the capital, as a bloody warning to the seditious.

Strengthened by this signal victory, other points of the Alexandrian creed were attacked in succession, and the time of the Jesuits was fully occupied in the translation into Ethiopic of sundry dogmatical treatises on subjects of disputed faith. But the barbarism of the language was

despised by most. The Latin interpolation was abhorred as magic by all, and a furious paper controversy raged for a time until the Abyssinians becoming scurrilous, the wrath of the monarch was again roused, and he issued a severe edict, wherein the people were forbidden from celebrating the Jewish sabbath, which from time immemorial had hitherto been kept sacred.

The inhabitants of Begemder flew to arms, and people from all parts of the country groaning under the yoke of foreign oppression, poured in to join the standard of rebellion, which Joanel had reared on the plains of his government. A horde of Galla delighting in the confusion, offered their assistance, and the most haughty conditions were speedily conveyed to court from a large assembly in arms.

Again the most earnest entreaties were employed to induce the emperor to compromise; but influenced by the words of the Jesuits, he called together his principal chieftains, monks, and learned men, and in their presence solemnly declared, that he would defend the Catholic religion to the last drop of his blood, adding, that it was the first duty of his subjects to obey their legitimate monarch.

Energetic measures were forthwith agreed upon, and at the head of a large army, the king proceeded in person to the war. Joanel finding himself too weak to contend in the plains, withdrew to the inaccessible mountains, where the blockade of the royal troops soon caused a scarcity of provisions. His forces gradually deserted, and he himself escaping to the Galla, was pursued, betrayed, and put to death.

This reverse sustained by the defenders of the old cause, did not however intimidate the inhabitants of Damat, a province situated on the banks of the Nile; for hardly had the emperor reached his capital, than the population rose *en masse*, with the determination of dethroning a monarch, who so basely truckled to foreign yoke, and of driving from the land the authors of its destruction. An army of fourteen thousand warriors was speedily organized, and monks and hermits, burning with zeal in the cause emerged from the cave and from the wilderness, to join the fast swelling ranks.

Ras Cella Christos marched against the rebels, but desertion considerably thinned his troops, and he confronted the enemy with barely one-half the numerical strength of their formidable army. Governor of the province, and greatly beloved by the people, a proposal was tendered to

him, that if he would only lend his assistance in burning the monkish books, and hanging the worthy fathers themselves upon tall trees, he might be seated upon the imperial throne of his ancestors. But the general despising the offer, and resting confidence in the firelocks of the Portuguese, rushed to the attack. The combat raged fiercely for a time. Four hundred monks devoting themselves to death, carried destruction through the royal host; but the tide of victory set at length in his favor, and after a fearful carnage on either side, he found himself master of the field.

Great rejoicings at court followed the news of this success. Peter declared that heaven, by the extermination of his enemies, had given the desired sign, that the Roman Catholic should be the religion of the land, and the emperor, who partly from fear of his subjects, and partly from dislike to relinquish his supernumerary wives and concubines, had not as yet publicly professed the Latin religion, now openly embraced the faith, and confessed his sins to the triumphant Jesuit.

A letter containing the royal sentiments was published for the benefit of the nation. "The king henceforth obeys the Pope of Rome, the successor of St. Peter, chief of the Apostles, who could neither err in doctrine nor in conduct, and all subjects are hereby advised to adopt the same creed." And the missionary who now reasonably imagined, that the work was satisfactorily concluded, wrote to the courts of Rome and Lisbon, requesting that a Patriarch and twenty ecclesiastics might be immediately sent to the vineyard, adding, that although the harvest was plentiful, the labourers were but few.

The happy tidings were received by Philip the Fourth of Spain; Mutio Vitelesse, the general of Jesuits offered to proceed in person, but the Pope refused permission, as had been the case with his predecessor Loyola, and Alphonse Mendez, a learned doctor of the Society of Jesus, was inaugurated at Lisbon with all the customary solemnities.

After suffering much difficulty and delay in his passage, the Portuguese Patriarch at length arrived on the Danakil coast, with a large train of priests, servants, masons, and musicians. The same greediness and cupidity were experienced amongst the savage Adaiel, that the traveller finds at the present day: baseness and avarice having stamped their character for generations; but the troubles of a weary march were soon forgotten in the cordial reception which awaited the party at the royal camp, and

the day was finally fixed when the homage of the king and of the country should be rendered to the Pope of Rome.

On the 11th of February 1626, the court and the nobles of the land were assembled in the open air. Two rich thrones were occupied by the monarch and his distinguished guest, and a surrounding multitude gazed upon the imposing ceremony in silence. The hour is come, exclaimed Mendez, when the king shall satisfy the debt of his ancestors, and submit himself and his people to the only true head of the Church. A copy of the Gospel was produced, and the monarch falling upon his knees, took the oath of homage. "We king of the kings of Ethiopia, believe and confess, that the Pope of Rome is the true successor of the Apostle St. Peter, and that he holds the same power, dignity and dominion over the whole Christian church. Therefore we promise, offer, and swear sincere obedience to the holy father, Urban, by God's grace, Pope and our Lord, and throw humbly at his feet our person and our kingdom."

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As the emperor rose from his position, Ras Cella Christos suddenly drawing his sword, shouted aloud: "What is now done, is done for ever, and whoso in future disclaims the act, shall taste the sharp edge of his trusty weapon. I do homage only to true Catholic kings." The monks, clergy, and noblemen followed the example of their superiors, and the assembly was closed by a public edict proclaimed through the royal herald, that all Abyssinians should, under pain of death, forthwith embrace the Roman religion.

Palaces and revenues were set apart for the ministers of the new faith. Seminaries for youth were established throughout the country, and baptism and ordination progressed in peace. The success of the Jesuits increased rapidly, and many thousand souls were enrolled, who had been converted from the delusions of the Alexandrian creed.

The trial of two years failed, however, to convince the nation of the benefits of the new religion, and the Emperor and Patriarch could not deceive themselves in the fact, that the cause advanced rather in appearance than in reality. Missionaries who entered the native churches were found murdered in their beds, the most disparaging stories were everywhere circulated regarding the holy fathers, and more particularly on the representation of Scriptural performances at the Paschal feast,

when demons being introduced by Romans upon the stage, the spectators rushed simultaneously from the theatre exclaiming, "Alas they have brought with them devils from the infernal regions," and the tale spread like wildfire throughout the land.

Nothing daunted by the unfortunate fate of Aclius and Joanes, Tekla Georgis, another son-in-law of the emperor, with a large body of the discontented rose to defend the religion of their forefathers. Burning the crosses and rosaries together with a Jesuit priest, who fell into their hands, the party rapidly increased, and the emperor was compelled to march an army to quell the insurrection. The rebels were completely routed by Rebaxus, the viceroy of Tigre, and all who fell into his hands, men, women and children, were barbarously massacred. Georgis and his sister Adera concealed themselves in a cave during three days, but were at length discovered and brought before the irritated emperor, and condemned, by the advice of the Jesuits, to be burned to death as a heretic. Georgis was allowed by the monarch publicly to solicit the Patriarch to be admitted into the Roman church, but it being afterwards considered politic to imagine that his intentions were insincere, the unfortunate prince was hung in front of the palace in presence of the whole court; and his devoted sister fifteen days afterwards, suffered the same fate upon the same tree; notwithstanding that the most strenuous efforts were made to save her life by the queen, and by all classes of society.

To increase the dread effects of his tyranny, the emperor now issued a manifesto, that even as he had punished with death the obstinacy of his own son-in-law, so he would of a surety not spare any who in future committed a like transgression. The remarks of the worthy missionary Antoine regarding this execution, will shew the spirit which animated the fathers in their course of persecution, so novel in the annals of Abyssinia, and so contrary to the mildness of the Christian faith. He who reads with attention the history of Ethiopia will observe, that at no previous period was such ardent zeal displayed for the honor of religion, and a direct miracle indeed must have induced the emperor to hang his own son-in-law in the blessed cause.

Dazzled by the success that had hitherto attended their measures, the Patriarch and his colleagues now plunged headlong into proceedings which eventually proved disastrous to their cause. Excommunications

were lightly launched in civil disputes, and the souls of the royal councillors of the state were committed to the devil for daring to question the authority of the foreign priest. Conspiracies were hatched against the imperial person, and the body of a distinguished nonconformist ecclesiastic, which had been interred within the walls of the church, was exhumed by the orders of the Portuguese prelate, and thrown to the wild beasts; an action which raised the indignation of the Ethiopians to the highest pitch against a set of men, who had ever the words of religion in their mouth; but who, after persecuting the living, denied even to the dead that repose which neither Pagan nor Mahomedan ever disturbed.

The detestation of the fathers and their religion daily waxed stronger in the hearts of all. Their great patron, Ras Cella Christos, was deprived of power and property for seditious attempts, and the bold mountaineers of Begemdet at length seized their long spears to uphold the faith of their ancestors. The viceroy was driven from the province, and Malcaus, a youth of royal blood appointed defender of the ancient religion, and leader of the armed host of peasants, who flocked to his standard from all parts of the country; but especially from Lasta, the seat of the bravest warriors of the land.

To quell this insurrection, the emperor assembled in Godjam an army of twenty-five thousand men, and attacked the insurgents among their strong-holds. His troops were, however, repulsed at all points, with the loss of many officers and men, and he was reluctantly obliged to retreat to the plains. Deputies followed from the victorious camp, to supplicate him to take pity upon his subjects, and to dismiss those evil-minded strangers, who had so long oppressed Abyssinia. The royal army was in no heart or condition to renew hostilities; rumours went through the land that angels sent from heaven had proclaimed the restoration of the ancient religion, and in the general excitement the king perceived that his own authority would be fatally compromised, unless some concessions were made.

But the Patriarch was inflexible, and letters were at the same time received from Rome, instigating the emperor to combat stoutly with his rebellious subjects, and extending to Ethiopia the general absolution of the great year of Jubilee. The unhappy inhabitants laughed to scorn the offer of this indulgence, and were utterly unable to compre-

hend, by what authority the Pope held in his possession the keys of the kingdom of heaven.

Meanwhile the civil war continued with great expenditure of life, and alternate success on either side. Enticed on to the plain, the enemy were generally worsted by the royal troops; but among the recesses of their native rocks, the mountaineers had always the advantage. No sign of intended submission could be observed, and the monarch becoming suspicious of the Jesuits, who were erecting posts and strong-holds under the guise of churches and residences, lent a favourable ear to the entreaties of his subjects.

A second remonstrance was penned, wherein he forcibly set forth to the Portuguese Bishop, that the Roman religion had not been introduced into the country by the miracles or the preaching of the fathers; but by royal edict and ordinance, in opposition to the wish of the entire population, and that the prelate must devise some milder measure, for the furtherance of the true faith.

Foreseeing a heavy storm in abeyance in case of refusal, Mendez reluctantly complied with the proposal of a modified church code, under the restriction, that no public manifesto should announce the change, which must be gradually and silently introduced.

The ancient liturgy and the ancient holidays were thus restored, and the celebration of the Jewish sabbath once again permitted.

But the concession was insufficient, and came too late to pacify the turbulent mountaineers of Lasta, who had been altogether victorious during the war. They would listen to no modification of their first demand; but imperatively insisted upon the complete establishment of their ancient ecclesiastical institutions, together with the expulsion of the foreigners from the land.

The liberty and the customs of highlanders are seldom invaded with success, and a religion detested by the common people, cannot without much difficulty be introduced by the prince. Weary of so many rebellions, and murders, and excommunications, the king in his advanced age, began to view with an unfavorable eye the firebrand authors of these disturbances. Suspecting his brother and the Patriarch of suspicious views; offended by the contumacy of his subjects, and the increasing diminution of his own authority; disgusted with the present state of affairs, and apprehensive of future events; he now seriously

bethought himself of restoring the church to its original footing; but the rebellion must in the first instance be quelled, and having with this view concluded an alliance with the Galla, he marched towards Lasta.

Twenty thousand peasants, confident of victory, descending from their mountains, rushed upon the plain to meet the royal force. The two armies for a time remained in sight in that still calmness which precedes an earthquake. At length the Galla cavalry dashing at full speed on the crowded masses of the enemy, threw them into complete confusion, a fierce combat lasted until the going down of the sun, and the field of battle was left covered with eight thousand bodies of the insurgents.

Throwing themselves prostrate before the triumphant monarch on this scene of carnage, the vanquished peasants expressed their grief in the following lively terms: "Who are these men," they asked with groans, "whom you now behold bathed in blood. Are they Moslem, or Pagan, or even the enemies of the kingdom? No, they are Christians—they are all thy subjects, knit together by the most tender bands of blood, friendship and affection. Those warriors who now lie lifeless at thy feet, would under a better government have proved the bulwarks of the throne, and the terror of those very men by whose hands they have fallen. The Pagans even blush at thy cruelty, and call thee renegade for having abandoned the religion of thy fathers. Cease, O emperor, in mercy cease, to prolong a struggle, which must end in the downfall of the throne, and the ruin of all religion in the land." The empress also mingled her tears with the groans of the wounded petitioners, and adjured the king for the love of God, and in the name of future generations, to take pity upon his subjects, and desist from performing a sepulchre for himself and for his family. "What have you gained by this battle?" she exclaimed, "you have introduced into the kingdom hordes of Pagan Gallas, who detest yourself equally as your religion; but futile will be your attempt to establish in Ethiopia a form of worship which is unknown to the greater part of your people, and to the remainder is known only to be resisted to the last drop of their blood."

These representations sunk deep into the heart of the emperor, and instead of proceeding in triumph to the capital, he retired to a secluded spot to give vent to his feelings, and bewail the loss he had created.

The Galla troops were dismissed, and having collected all the principal monks and clergy, he announced his resolution of allowing the nation to return to the faith of their forefathers.

Immediately on this intelligence, the Patriarch hurried with all the Jesuit fathers to soothe the ruffled mood of the monarch ! “ I had fondly imagined,” exclaimed Mendez, “ that we were the victors, but behold we are the vanquished, and the rebels routed and put to flight, have obtained all that they desired. Call to mind how many fields thou hast won with the assistance of God and the Portuguese, and remember that thou didst embrace the true faith of thine own free will. We have been sent unto the charge by the Pope of Rome and by the king of Portugal, —beware of irritating great potentates to just indignation. They be indeed far off, but God is nigh at hand, and thy apostacy will defile thy name and that of thy nation, and leave an impenetrable stain upon the lion of the tribe of Judah which glitters in the standard of Ethiopia.”

On the conclusion of this harangue all threw themselves at his feet, entreated an immediate order to execution, rather than a confirmation from his lips of the rash resolution he had taken.

Retaining a too lively recollection of the streams of blood that had been poured out upon the plains of Lasta, the emperor quietly allowed the Jesuits to arise, and unmoved by their earnest prayers and entreaties, replied shortly,—that his adherence to the Catholic faith had already caused the slaughter of a greater portion of his subjects, and that he would have no further dealings whatever with their doctrines.

The film fell from before the eyes of the discomfited monks. The friends of the Alexandrian faith rallying round the throne, united their utmost efforts to strengthen the emperor in his resolves, and the rumour spread abroad, that on the fast of St. John the Baptist, the ancient religion was to be re-established throughout the land.

Thousands assembled in the capital on that day to assist in the ceremony, and although temporarily disappointed, the clergy proved that this act of justice could no longer be safely delayed.

Every art and stratagem was still resorted to by the Patriarch to put off the evil day, but the emperor roused at length by the harsh and uncompromising character of the Jesuit, fiercely exclaimed : “ Has then the sceptre departed from mine hand for ever ?” and the royal trumpets

suddenly sounded through the streets of Gendar, as the herald announced the following proclamation to the empire.

“ Listen and hear, we formerly recommended to you the adoption of the Roman Catholic creed, on the firm conviction, that it was the only true one ; but numbers of our subjects having sacrificed their lives for the religion of their ancestors, and we henceforth accord its free exercise unto all. Let the priests resume possession of their churches, and worship the God of their forefathers. Farewell and rejoice.”

It is not possible to describe the rapture with which this welcome edict was received. The praises of the emperor resounded from every quarter.

The rosaries and the chaplets of the Jesuits were tossed out of doors and burnt in a heap. Men and women danced for joy in the streets, and the song of liberation burst from the lips of the disen-thrall'd multitude.

“ The flock of Ethiopia has escaped from the hyenas of the West.
The doctrine of St. Mark is the column of our Church.
Let all rejoice, and sing Hallelujah ;
For the sun of our deliverance has lighted up the land.”

Sunscus did not long survive this victory over himself, for a slow fever carried him off during the month of September of the same year, and his son Basilides was called to the throne. His first act was the suppression of a conspiracy raised against him by the Jesuits, who were in consequence deprived of their arms and munitions of war, and exiled from Maignagna. The obstinate prelate long refused to submit to this order, until his effects having been plundered by the banditti, he also, after destroying the pictures and sacred utensils of the church, withdrew from the province for ever.

Still the fathers had not relinquished all hope of exciting disorder in Ethiopia, and finding their profit in the troubled waters. Entering into a treaty with the rebellious chieftain Johannes Akayus, upon condition of protection, they promised liberal supplies from India, both of money and Portuguese soldiers ; but the emperor being soon made acquainted with the arrangement, expelled and commanded them to repair forthwith to Massowah.

The banished foreigners lay for some time concealed among the mountains, awaiting the expected succours from Goa ; but the Patriarch

feeling insecure in his hiding place, escaped with great difficulty to the sea coast, where he was seized by the Turks, and for a season forced to work like a slave. Before taking leave of Akayus, his consent had been obtained to the sojourn of four Jesuits until assistance should arrive from the Portuguese possessions. Five years, however, elapsed without any accomplishment of their hopes, and they were finally delivered up to the Abyssinian monarch, who exiled them as traitors to the province of Lasta, where falling into the grasp of the infuriated populace, they were hung upon a tall tree to expiate their ambitious zeal.

After much persecution and insults at the hands of the Turks, and extreme suffering from the intolerable heat of the climate, the Patriarch was ransomed for the sum of four thousand dollars, and landed at Goa, where he sedulously employed himself in raising troops for the conquest of Abyssinia. Father Lobo was despatched to Europe in order to demand military assistance, which was never granted, and all the prelate's endeavours proving unsuccessful, he was at length reluctantly compelled to abandon the project in despair.

Thus terminated the labours of a mission, which for craft and cruelty has been seldom equalled in the annals of time. Whilst Rome must indeed have been prompted by no ordinary motion, to persevere so pertinaciously in a work of conversion through all the horrors of banishment and martyrdom, the unworthy means resorted to by the dauntless, but unsuccessful agents employed in the enterprize, have left an indelible stain upon the page of her history.

(Signed) D. GRAHAM, *Captain,*
Principal Assistant to the Embassy.

(True Copies.)

Signed) J. P. WILLOUGHBY,
Secretary to the Government of Bombay.

Proceedings of the Asiatic Society.

(Wednesday Evening, 4th August, 1843.)

The usual Monthly Meeting was held at the Society's Rooms, on Wednesday evening at 8½ p. m. The Honorable the President in the chair.

The following new members were proposed :—

Major W. Anderson, B. H. A.—Proposed by H. Torrens, Esq., seconded by Capt. Broome, B. A.

Dr. Mouat, B. M. S.—Proposed by J. Thomason, Esq., seconded by H. Torrens, Esq.

Capt. Stephen, B. N. I.—Proposed by J. Thomason, Esq., seconded by Mr. H. Piddington.

M. Adolphe Delessert, author of "*Souvenirs d'un Voyage dans l'Inde*" was introduced to the Society, and upon the motion of Colonel Forbes, seconded by Mr. Torrens, was unanimously elected an Associate and Corresponding Member: the usual communication of the rules, &c. was ordered to be made to him.

The following list of Books presented and purchased was read :—

Books received for the Meeting of the Asiatic Society, for July, 1843.

Naturalist's Library—Ichthyology, vol. iv. British Fishes, vol. i. by R. Hamilton. Edinburgh, 1813.—Purchased.

The Oriental Christian Spectator, July 1843, vol. iv. No. 7. Bombay.—Presented by the Editor.

London Edinburgh and Dublin Philosophical Magazine and Journal of Science, 3d Series, vol. 22. Nos. 143-144, February and March, 1843.

The Annals and Magazine of Natural History, London, vol. 11. No. 69, March 1843.

Chapitre inconnu du Coran, par M. G. de Tassy. Paris 1842, l'amphlet.—Presented by the Translator.

Julien, Simple exposé d'un fait honorable, odieusement dénaturé dans un libelle récent de M. Pauthier. Paris, 1842, Pamphlet presented by the Author.

Journal des Savants, for November and December 1842, and Janvier 1843. Paris purchased.

Meteorological Register for Calcutta, for the month of June 1843. Surveyor General's Office.

Mineral Resources of Southern India, by Lieut. (now Capt.) Newbold, F.R.S. &c.—Presented by the Author.

Penny Cyclopaedia, vol. 1 to 24.

The Secretary called the attention of the Meeting to the absolute necessity for the purchase of books of standard merit, for reference in the various departments of the natural sciences. He stated, that while the Society's splendid and increasing collections in Zoology, Osteology, Paleontology, Geology, Mineralogy, and their various subordinate branches, were daily increasing, and likely to increase, the Curators, who were its paid and working officers in all these and other departments, were obliged to find the necessary works of reference as they best could, in their own libraries, or in those of others, and thus much valuable time was lost, and many sources of information were closed to them from the frequent impossibility of pro-

curing rare, or costly, or little known works, and from the want of those recent ones which afford the knowledge of the current and hourly changing state of science at home; and that without such works it was most unfair, as well as impossible, to expect that the duties of the Curators and the Editorship of the Society's Journal could be conducted in a manner fully creditable to the high reputation of the Society. He had therefore presented this evening the following works for the inspection of the Society, and for purchase, if these views were approved of:—

Cuvier, *Histoire Naturelle de Mammifères*. Paris, 1824, 3 vols.

Selby's *British Ornithology*, 2 vols.

And he proposed farther, that upon lists being prepared by the Curators, the purchase of such standard works as they may require be authorised.

Some members expressed a wish, that some of the literary departments of the Society's Library should also be better furnished, particularly those relative to Oriental matters. After some conversation, the purchase of the Penny Cyclopaedia was authorised. Cuvier's *Mammifères* was to remain till the decision of the Committee of Papers was known, and Selby's *British Ornithology* being considered as nearly superseded by later and better works of reference, was returned to the booksellers. It was farther agreed, that a memorandum should be circulated to the Committee of Papers on this subject.

Read the following letter from the Secretary to the Government of Bombay:—

No. 1460 of 1843.

From the Chief Secretary to the Government of Bombay, to H. TORRENS, Esq., Secretary to the Calcutta Branch of the Royal Asiatic Society

Political Department.

SIR,—I am directed by the Hon'ble the Governor in Council, to acknowledge the receipt of your letter, dated the 9th ultimo, and to inform you, that the 24 copies of the Vocabulary, by Captain Eastwick, of the Scindee Language therewith forwarded, have been received by me.

I have the honor to be, Sir,

Your most obedient Servant,

L. R. REID,

Bombay Castle, 26th June, 1843.

Chief Secretary to Government.

No. 1625 of 1843.

From the Chief Secretary to the Government of Bombay, to H. PIDDINGTON, Esq., Sub-Secretary Asiatic Society at Calcutta

Political Department.

SIR,—I am directed by the Hon'ble the Governor in Council, to acknowledge the receipt of your letter, dated the 10th of May last, and to acquaint you for the information of the Committee of the Asiatic Society, that the packets which accompanied it, have been forwarded to Major Leech and Captain Eastwick.

I have the honor to be, Sir,

Your most obedient Servant,

Bombay Castle, 15th July, 1843.

L. R. REID,

Chief Secretary.

Read the following letter from the Secretary :—

To F. J. HALLIDAY, Esq. Secretary to Government of Bengal, Asiatic Society's Rooms, the 21st June, 1843.

SIR,—With reference to Mr. Secretary Bushby's Letter, No. 446, dated the 31st March, 1841, I have the honor, by direction of the Hon'ble the President and Members of the Committee of Papers of the Asiatic Society, to submit a statement of Disbursements made by the Society on account of the Museum Economic Geology from February 1841 to May 1843 both the months inclusive amounting to Rupees 1,040 7 3, of which a considerable proportion is for postage and apparatus for the laboratory; and to request that the permission of the Hon'ble the Deputy Governor of Bengal may be obtained for the Sub-Treasurer to pay the amount to my receipt.

2. I am also desired to request, that His Honor will accord the Society authority to draw from the General Treasury monthly a sum not exceeding Rupees 64, for Establishment and Contingencies

<i>Establishment.</i>	
1 Writer, ... Co's. Rs.	16
1 Carpenter,	8
1 Peon,	5
	29
Contingencies,	35
Co's. Rs. ...	64

for the Museum Economic Geology, as exhibited in the margin, which after the experience of two years seems indispensably necessary for the efficient discharge of the duties of the Museum.

3. The utmost care will be taken in conducting the outlay on such a scale of strict economy as to be kept within the Estimate for Contingencies. Should a surplus exist at the close of the year, it will be duly carried to credit on account of the ensuing twelve months, and special report made accordingly.

I have, &c.

H. TORRENS,

Vice President and Secretary Asiatic Society

And the reply thereto, as follows :—

No. 691.

From Under-Secretary to the Government of Bengal, to H. TORRENS, Esq., Vice President and Secretary Asiatic Society, dated Fort William, 3d July, 1843

SIR,—I am directed by the Hon'ble the Deputy Governor of Bengal to acknowledge the receipt of your letter, dated the 21st ultimo, submitting a statement of Disbursements made by the Asiatic Society on account of the Museum Economic Geology, from February 1841 to May 1843, amounting to Rupees 1,040 : 7 : 3, and in reply to state, that the necessary instructions for payment of the same will be issued from the Financial Department to the Sub-Treasurer.

As regards the further request of the Society for authority to draw from the General Treasury a monthly sum of Rupees 64 for Establishment and Contingencies, for the Museum Economic Geology, I am desired to say, that a reference on the subject will be made to the Supreme Government.

I have the honor to be, Sir,

Your most obedient Servant,

A. TURNBULL,

Under Secretary to the Government of Bengal.

Read the following letter from Professor J. Mohl of Paris :—

H. PIDDINGTON, Esq., Acting Secretary of the Asiatic Society of Bengal.

SIR,—I have received your letter of the 6th of March, by which you inform me, that the Asiatic Society of Bengal has done me the honor to elect me a Member of the Society. I am very gratified for the great distinction thus conferred upon me, and beg you will have the kindness to lay before the Council of the Society, the expression of my thanks for it.

I have the honour to be, Sir,

Your very obedient Servant,

JULIUS MOHL.

Paris, 20th of May, 1843.

And the following extract of a private letter from M. Mohl, addressed to Mr. Piddington, as Acting Secretary of the Society, in reference to the incomplete presentation of works in the Society's Library. (See Proceedings of July.)

MY DEAR SIR,—Allow me first to thank you for the part you have had the goodness to take in my election as Foreign Member of your Society, it is an honour which I appreciate very highly. I will try to answer on all the points on which you have written to our friend Troyer.

1st. The debt of the French Government to the Asiatic Society for copies of the Vedas must by this time be paid. It ought to have been done a long time ago.

2d. The books you want shall be bought and sent very shortly. I see that there is not money enough at the account of your Society, because the delay of the box containing the 4th vol. of the Mahabharat has stopt the sale of the book for a long time, and most people who have bought the 1st vol. have got impatient and sent to London for the last volume. But the books shall be bought notwithstanding.

3d. You have sent a list of books which have arrived incomplete; I will try to explain the matter as far as I can.

Agassiz, Hist. Nat. des Poissons 1er livraison. I do not think this was sent by our Society.

Curver Hist. des Poissons vol. i.—xvi. If a further vol. should have appeared, it shall be sent.

Quatremère Hist. des Mongols, vol. i. Is all that has appeared.

Mohl, Livre des Rois de Firdousi, vol. i. The second vol. has appeared and shall be sent.

Histoire Generale des Huns, vols. i. and ii. I am sure this was not sent by us.

Quatremère, Histoire des Sultans Mamelouks 1. et 2. Is all that has appeared, but a new vol. is coming out. It was not sent by us, but most likely by the Translating Fund in London, whose property it is.

Dubeux, Chronique de Tabari, vol. i. Is all that has appeared, the second vol. is printing; it is the Translating Fund's property.

Jaquemont, Voyage dans l'Inde, 13 livrs. There have appeared 45 livrs. till now. It was most likely sent by the French Minister of Public Instruction, and I will enquire why the rest has not yet been sent, and try to get it.

Vendidad Sade, by Burnouf, nine numbers were sent by us, it is all that appeared, but the last number is printing, and shall be sent.

L'Espagne Artistique, 1 livr. was not sent by us.

Harivansa by Langlois, must have been sent by the Translating Fund, whose property it is.

Description de l'Egypte. I have no idea who has sent this. I asked about six years ago M. Thiers, then Minister of the Interior, to present a copy of it to your Society; it is possible he sent it through the Marine. I will try to get it completed, but am not sure to be able to do it. I know it is a most complicated business to get a copy of this work.

4th. I am afraid a large box of books sent by us must have been lost somewhere. Mr. Prinsep offered us to take charge of a number of copies of the Asiatic Society's books, to be sold in Calcutta, we sent in 1838, a few copies of each; amongst the rest, 12 copies of Mr. Troyer's *Raja Tarangini*, but we never heard of them again, and I do not find in your lists of books received any mention of them. Mr. Prinsep had advised me to address the books to the Governor General, as they would be then free of duty, and as the Governor General in the interval went to Upper India, it is possible the books may have followed him, and be left or lost somewhere. It is most likely quite useless to enquire now for them; but if you should believe that any of them would find buyers, I would be very happy to send another set. You will find the list on the cover of any number of our Journal.

Read, and approved, the following drafts of letters to Ministers of Foreign Courts, and to the Vice-Chancellors of Universities, to be sent with the presentations of the Society's Oriental works, as per resolution of the last Meeting, (See Proceedings of July,) and it was farther resolved, that communications should be opened with literary and scientific societies in Europe and America as occasion might offer.

To His Excellency the Minister of Public Instruction of France.

I have the honour, by direction of the President and Members of the Asiatic Society of Bengal, to forward to you two complete sets of each of the works noted in the margin, being standard works in (and upon) the Arabic, Sanscrit and Thibetan languages, published or deposited for sale with the Society.

The Society requests that you will place these books at the disposal of His Majesty the King of the French, with the expression of their respectful hope, that they may prove of sufficient interest to merit a place in the Royal Library, or in one of the Public Libraries of His Majesty's kingdom.

Should any works published, (as so many have munificently been by the French Government,) for the general benefit of science, be now in course of distribution to learned bodies, Colleges, and Societies in Europe, the Asiatic Society of Bengal would beg to inscribe its name as that of a constituted body labouring in the cause of general science, and earnestly desirous of reciprocating the presentation of works, the tendency of which is its advancement

France, 2—Holland, 1—Prussia, 1—Austria, 1—Russia, 1—America, 1—Universities of Oxford, Cambridge Dublin, and Christiana.

To the Very Reverend the Vice Chancellor of the University of Oxford.

REV. SIR,—I have the honour, by direction of the Asiatic Society of Bengal, to forward to you for presentation to the University over which you preside, the books noted in the margin, being standard works in (and upon) the Arabic, Sanscrit, and Thibetan languages, published by or deposited for sale with the Society.

The Society begs that should any works published for distribution to learned bodies by the University, or under its patronage, be now in course of such distribution, its name may be inscribed as desirous of reciprocating the presentation of works, the tendency of which may be the advancement of science and literature.

No. II. of Mr. Heatly's Paper on the Mineral Resources of India, and a Memoir of Mr. Keir, one of the early speculators in various Indian products, were presented for the Journal, to the Editors of which they were referred.

Extract of a letter from Mr. Batten, C. S. dated Almorah, 17th July, was read, stating that Capt. Boyes, 6th L. C. (See Proceedings of June p. 521) had unfortunately only reached Milum in his progress towards the Passes, having there lost almost all his baggage by a sudden flood.

The following letter, accompanying a note on a Fossil Antelope, from the Dadoopoor Museum, by Capt. Baker, B. E., was presented with a very beautiful drawing, shewing the close relation of the Fossil to the African Antelope types, *Acronotus Caama* (the Hartebeeste,) and *A. Lunata*, (the Sassaybe,) with its deviation from the Indian Antelopes. This curious relation excited much interest, and the paper and plate will appear in an early number of the Journal.

To the Secretary of the Asiatic Society.

DEAR SIR,—I have the pleasure to forward a paper for publication in the Journal of our Society, should you consider it suitable for that purpose. I am about sending the *elite* of my Fossils to Europe, and will, if I can find time, send you a brief notice of the most remarkable among them.

Aurnaul, July 21, 1843

Believe me, dear Sir,

Yours sincerely,

W. E. BAKER.

Read the following letter from Captain D. Williams, first Assistant to the Commissioner, Arracan, accompanying two Gold Coins presented by him to the Society.

Ramree, Arracan, 5th July, 1843.

DEAR SIR,—I have now the pleasure to send you, for presentation to the Asiatic Society, two of the gold coins found on Cheduba Island, they are the most perfect of those found.

The Natives who found them tell me, they were dug up out of the sand on the Sea beach, about 100 yards from the Sea, scattered about.

I shall feel obliged if you will let me know what country, &c. these coins belonged to, as I can gather no information on the subject from the Mugs.

Yours truly,

D. WILLIAMS.

The coins have not yet been recognised, and we are inclined to consider them, if not Siamese or Burmese, of a very early Hindoo type, perhaps even as far back as the dynasties under which the Hindoos were a navigating and a colonising people. They are of thin sheet gold, rudely cut out, 1.4 and 1.3 inches in diameter, but weighing only 76.5 and 77 grains, and stamped on one side only. The central emblem is an elephant surrounded by monograms or symbols. We shall take an early opportunity of lithographing these curious reliques.

Read a paper "On an improved Sympiesometer," called "The Tropical Tempest Sympiesometer," by Mr. H. Piddington. The instrument was also exhibited, and the paper referred to the Journal.

Read "Memorandum on Zoological Desiderata from Arabia," by E. Blyth, Esq. the Society's Curator, intended for transmission to Aden and other parts in that neighbourhood.

Read the following letter from Major W. Anderson, B. H. A. accompanying 19 bags of specimens therein alluded to:—

To the Vice President and Secretary to the Asiatic Society.

MY DEAR TORRENS,—I have the pleasure to send you the various bags of musters. On looking them over, I fear they are not so valuable as I had hoped, but as they are, I should like a good professional report, as to quality, use, and price here, which information from their own country I have in Persian, and will prepare

1. Roodung
2. Pistah.
3. Zurcash
4. Hanab.
5. Hing.
- 6 Buz-Gung.
7. Zeeruh Sufueed.
8. Gul Kajuree.
9. Alooe Eerance.
10. Teerungabeen.
11. Zaj.
- 12 Keermuz.
13. Sualob Misree
14. Sulphur from Bagh.
- 15 Gum used to fix on dry paint.
- 16 Safflower, I suspect.
- 17 Teerungbaeen.
- 18 Toolee
19. Zumah Buloorce.

Your's sincerely,
WM. ANDERSON.

Ichapoor, 26th July, 1843.

A paper on "The Mineral Resources of Southern India," by Lieut. (now Capt.) Newbold, M. N. I. was presented by the author.

Read a letter from A. A. Sevestre, Esq. giving cover to his subscription of 50 rupees, towards the Portrait of the Hon'ble Mr. Prinsep.

Report of the Curator of Museum Economic Geology, &c.

Geological and Mineralogical Department.—We have to announce here the contribution of a very handsome little suite of Geological specimens from Almorah to Mullarie, sent by our new and zealous member, Capt. Boyes of the 6th Light Cavalry. These specimens are unfortunately small, but they are accompanied by a capital

Map of the localities, and an accurate catalogue of them, to which illness has prevented me from adding the Mineralogical designations.

Museum of Economic Geology.—I noted in my last Report that we have received a reference from Government on the subject of the Argentiferous Lead and Antimony Ore of Chota Nagpore, forwarded to Government by Colonel Ouseley; I now present, with the correspondence, my Report to Government through our Secretary.

No. 576

From Under-Secretary to the Government of Bengal, to H. TORRENS, Esq., Secretary to the Asiatic Society, Calcutta, dated Fort William, 5th June, 1843.

SIR,—I am directed to forward to you, for the purpose of being submitted to your Society, the accompanying copy of a letter from the Agent to the Governor General S. W. Frontier to this Department, and certain Specimens of Argentiferous Galena alluded to in the letter. The Hon'ble the Deputy Governor of Bengal requests your Society will, in conjunction with Mr. Piddington, make such further enquiries and experiments as may be necessary, and report the result to this Department.

I have the honor to be, Sir,

Your most obedient Servant,

A. TURNBULL,

Under Secretary to the Government of Bengal

No. 24.

From Lieut. Col. J. R. OUSELEY, Agent to the Governor General S. W. Frontier, to T. R. DAVIDSON, Esq., Secretary to the Government of Bengal, Fort William, dated 22d May, 1843.

SIR,—Herewith I beg to forward specimen of Argentiferous Galena from a place N. N. West of this, named Hisato, for the inspection of the Hon'ble the Deputy Governor.

2d From analysis here by Dr. Macrae, and the examination of it and tests applied by Mr. Piddington in Calcutta, reported in the Journal of the Asiatic Society, a very large proportion of silver is attainable. It may be considered desirable by the Government to make further inquiry, and if, as anticipated by Mr. Piddington, the results should prove so very profitable, adopt measures for working the mine, which is within the Zemindary of Ramgunrh. The lead ore is abundant.

I have the honor to be, &c.

(Signed) J. R. OUSELEY,

Governor General's Agent.

Chota Nagpore, 22d May, 1843.

P.S.—Despatched this day.

1 Specimen of Ore

1 Ditto ditto

1 Small parcel with Matrix.

(True Copy.)

A. TURNBULL,

Under Secretary to Government of Bengal.

H. TORRENS, Esq., *Secretary of the Asiatic Society.*

SIR,—In reply to the reference to the Museum of Economic Geology by the Hon'ble the Deputy Governor in Council, accompanying a specimen of the ore and matrix forwarded by Major Ouseley from Hisato, 12 miles N. N. W. of Chota Nagpore, under date of June, 1843, I have the honor to report as follows:—

1. My former Report (Journal, vol. xi. p. 892,) to which Major Ouseley's Letter refers stated, not that "a very large proportion of silver was attainable," but simply that the proportion of silver then found "*would in Europe be thought worth working.*"

2. The present specimen is a less favourable one, giving a mere trace of silver, and this is a just instance of the uncertainty of these small laboratory trials of ores, especially as far as relates to the value of minute parts. No two experiments agree, and where the proportion of the valuable ore is a mere fraction, the results are of course always the more uncertain.

3. The appearance of the matrix, and the presence of the antimony are, as before remarked, favourable indications; *but they are nothing more*, and indeed my report might stop here, and be comprised in this, that the present specimen is an ore of little or no value in its present situation, and with present appearances, but offering indications worth farther investigation.

4. It may however be satisfactory to Government and to Major Ouseley to have the reasons upon which this view is founded, and I therefore take leave briefly to state them here, as it is specially within the province of our institution to explain matters of this nature.

5. In all mining, and indeed in many other countries, it has been well remarked, that it is not veins and ores that are wanting, but *profitable* ones. It was the ignorance or neglect of this great and first principle in mining speculations, which sacrificed so many millions of English capital in Mexico and South America. The agents of the Mining Companies could not, or would not, suppose that a *Silver mine*, or a mine which produced Silver ores could be a losing concern, and they bought up, at enormous prices, hundreds of spots from which indeed Silver was obtainable, but not to a profit.

6. In the case before us, we have, at the most, an ore of Lead and Antimony, with the minute portion or traces of Silver which always accompany these ores, and supposing it to be obtainable in any quantity, and at the cheapest possible price, or indeed for nothing, we should still require all the expensive resources of the best European Metallurgy, and establishments with scientific superintendence to render it a marketable article here. As a mere ore, it would probably not pay its carriage to Calcutta and freight to Europe.

7. In a spot then affording only favorable indications, and where we have assumed already much that is doubtful, it is clear that the first step is to know—

I. What the vein really is?

II. What are the facilities for, and difficulties against working it, and the expence attendant on all these and on the necessary superintendence?

III. What those for transporting the products to a market are?

I. The vein may be the outcrop of a rich mine, or it may be worthless or unworkable, or break off, even for Lead and Antimony, at 10 fathoms deep. It follows that a professional and a scientific man should first be sent to the spot with all necessary means, that a shaft or gallery should be dug, and the ores from it, as far as he can reach, be examined. This is necessarily and indispensably the first step.

II. During this examination, all questions relative to the facilities and difficulties likely to attend on the working would be inquired into, and in India these are far more than Europe, as the following enumeration of a few of them will shew: 1st, healthiness or unhealthiness of the site; 2d, possibility of obtaining workmen; 3d, of subsisting them; 4th, of erecting machinery, furnaces, and the like; 5th, fuel; 6th, drawing or pumping water; 7th, general cost of bringing the ore to bank (i. e. to the mouth of the mine;) 8th, cost of preparing, smelting, and produce of the metal at the furnace.

III. Supposing the metal or ore to be thus obtained at a profitable rate, it has yet to be taken to a market, and this involves all the questions of road, carriages, warehousing and agency in Calcutta, and perhaps even freight, insurance, duties and sale charges in England.

From the foregoing then it will be seen, that we can recommend at the most but a careful examination of the vein as an indispensable preliminary step, but this I should respectfully beg to do, because the locality being about the lines where the granite and stratified formations meet is a favourable one; because the appearance of the ore is favourable; and because it is really a question of much interest in a district so little known, and so near to Calcutta, to determine what it may really prove to be. I may mention, finally, that the matrix of the present specimen differs greatly from the one formerly sent. There may evidently be half a dozen other valuable mineral substances at this spot or near it, though considered as mere stones by those unacquainted with them. One of the richest of the silver ores, for instance, the muriate of silver, (not unfrequently found in company with such as the one under examination,) would in all probability be thought a worthless stone.

I have the honor to be, Sir,

Your obedient Servant,

H. PIDDINGTON,

* 28th July, 1843.

Curator Museum of Economic Geology.

P. S. In illustration of the closing remark of this report, that valuable ores of Silver (as of many other minerals) may easily be passed over as worthless stones, I beg to quote from Professor Jameson's *Mineralogy*, vol. iii. p. 75.

"In some parts of Mexico, however, as we are informed by Mr. Humboldt, the operations of the miner are directed to a mixture of ochry brown Iron ore and minutely disseminated native Silver.* This ochreous mixture, which is named *Pacos* in Peru, is the object of considerable operations at the mines of Angangneó in the intendancy of Valladolid, as well as at Yxtapexi in the province of Oaxaca."†

I am fortunately enabled to exhibit to the Society from my own collection, about twenty specimens of silver ores of various kinds, but mostly such as shew little or no appearance of metal, and several are the true *Pacos* from Peru, the inspection of which will at once convince the most sceptical of this curious fact. Humboldt indeed adds, that a very large proportion of the silver of Mexico and South America

* Of muriate of silver also.—H. P.

† *Pacos*, according to Klaproth, contains Silver, 14 0

Brown Oxide of Iron, 71 0

Silica, sand, water, &c 13 0

is obtained not from rich ores, but from the poor ones approaching to this remarkable mineral.

Memoranda by the Secretary and President.

I have the honor to lay before the Hon'ble the President, and the Members of the Committee of Papers, the report of the Curator of our Museum of Economic Geology upon Major Ouseley's specimen of an Ore from Chota Nagpore.

As the considerations contained in this report appear very sound and pertinent, I would submit whether the Society would not do well in addressing Government to call special attention to them.

How far such considerations might induce high authorities to propose attaching a practical master miner to the Department of Economic Geology confided to our Society, I of course cannot pretend to speculate upon; but it is evident, that unless local experiment be entered upon, the value of the ore in question as a profitable working ore can hardly be determined.

As Mr. Piddington's reflections apply equally to all newly discovered Indian mining sites, the employment of a professional miner on those of which we already know the existence, can alone lead to practical results.

29th July, 1843.

H. TORRENS,

Vice President and Secretary.

A copy of Mr. Piddington's report should, I think, be forwarded to Government in reply to the reference made to us on the subject. W. W. B.

At the close of the Meeting, the Hon'ble the President and Members were invited to view the tablet placed over the Asoka Stone, which we may state is placed on a stand beneath the pillar destined for the bust of the lamented James Prinsep. The tablet is one of pure white marble occupying a frame above, the Stone; and the inscription upon it in letters of gold is as follows:—

THIS EDICT OF ASOKA (B. C. 250)

IS HERE PLACED

BY THE ASIATIC SOCIETY OF BENGAL

IN HONOR OF

THE PHILOSOPHER THE ANTIQUARIAN

AND THE PHILOLOGIST

BY WHOM

ITS CHARACTERS WERE FIRST DECRYPTED

JAMES PRINSEP.

The President and Members expressed their high approbation of this arrangement, as a just tribute to the memory of their ever-to-be-lamented Secretary and Associate.

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JOURNAL

OF THE



ASIATIC SOCIETY.

As-Soyúti's work on Earthquakes, called كشف الصلصلة عن وصف الزلزلة للمسيوطي Kashf as-Salsalah 'an wasf Az-zal-zalah, i. e. removing the noise from the description of the Earthquakes, (or clearing up the description of Earthquakes.) Translated from the Arabic by A. SPRENGER, Esq. B. M. S.

Jelal-ed-din as-Soyúti, an Egyptian polygrapher of some merit, died in A. H. 911. He wrote this work on the occasion of an earthquake in Egypt, with a view of showing to his countrymen by a number of traditions which have been omitted in this translation, that earthquakes are ordained by God to punish men for their sins. At the same time the author wished to console them by showing them from history, that much more frightful punishments of this kind had taken place than the one under which they suffered in his time. This translation has been made from an Arabic MS. of the Royal Library at Paris, (fonds Asselin N. 218) which is neither very correct nor legible. A better copy is preserved in the library at Gotha. This translation, was not made with the view that it should ever be published, but it was merely intended as a sort of a hasty memorandum for the translator, it will therefore probably not stand the criticism of the philologist, though the student of Natural Philosophy may rely, that the facts are in general correctly rendered into English.—A. S.

It would appear that this is the original of the Persian work known amongst the native literati of the Western Provinces, by the name of 'Zelzele Namah,' for which enquiry was made sometime ago by Lieut. Baird Smith. See Proceedings of Nov. 1842, Vol. xi, p. 1201. Upon our mentioning it to Dr. Sprenger, he expressed this opinion, and has been kind enough to place this curious little Treatise at our disposal for the Journal.—Eus.

A. H. 94. On the 20th of Adar (March) an earthquake in Syria, which lasted forty days. Many buildings were destroyed in Antiochia.

98. Again for forty days, during the Khalifat of Omar Ben Abdul-aziz, in Syria.

130. There was an earthquake at Damascus, which was so violent, that the people were obliged to leave the town.

131. Several new shocks in Damascus.

180. In Egypt a very violent earthquake. The minaret of Alexandria was destroyed.

187. At Masisa المصيص an earthquake and an inundation.

203. In Khorasan an earthquake which lasted seventy days; the mosque of Balkh and the fourth part of the town were destroyed.

219. Great darkness from noon until the evening.

220. Antiochia was destroyed by an earthquake, which lasted forty days.

224. An earthquake at Fergana, by which 15,000 persons perished.

225. An earthquake at Ahwaz for sixteen days; it was also felt in Jebal.

233. At Damascus many persons were buried under their houses; the earthquake extended to Antiochia, Mesopotamia, and Mausil. It is supposed that 50,000 persons perished.

232. Several earthquakes, more particularly in the Maghrib and in Syria, where the walls of Damascus and Emessa were destroyed. It was felt at Antiochia and El-Awassim العواصم in Mesopotamia and Mausil.

233. On Thursday, the 11th of Rabi-al-Akhar, many buildings were destroyed at Damascus by an earthquake.

234. At Herat, the houses were destroyed.

239. At Tiberias.

240. In the Maghrib, thirteen villages of Kairowan sunk.

242. In Shaban a very violent earthquake. At Tunis about 45,000 persons were buried under their houses; it extended also over Yemen, Khorasan, Fars, Syria, Bastam, بستم Komm قم Kashan, قاشان Rai, الدامغان el-Damaghan, Nishapur, Taberistan and Ispahan. The mountains fell down, and the earth opened so extensively that men could walk into it; and in the village El-sud السود in Egypt, five stones fell from heaven. One stone fell on the tent of a Bedouin and set it on fire. The weight of these stones was ten rotles. In Yemen a hill covered with fields moved from its place and became the property of another tribe.

245. Earthquakes prevailed over the whole earth, and many towns and bridges were destroyed.

At Antiochia a mountain fell into the sea, with 1005 houses. It had been covered with about ninety villages. The river disappeared one farsang's distance. Dreadful noises were heard at Tinnis.

In Mecca all the springs disappeared. The earthquake extended over Rakka, Harran, Ras el-'Ain, Emessa, Damascus, Rokha, Tarsus, Massissa and Adina. On the shores of Syria, in Laodicea, mountains moved with their inhabitants, and when it had destroyed السنى El-son, it crossed the Euphrates, and was felt in Khorassan.

249. In Dhul Hajj was a very violent earthquake, at Rai the houses fell down, and the people took flight into the fields.

258. At Wasit about 20,000 persons were buried under their houses, by an earthquake.

268. At Bagdad an earthquake, followed by torrents of rain and a thunder-storm.

280. At Ardebil six earthquakes took place in the course of this year; 100,000 persons died under the ruins of their houses. One of these earthquakes was preceded by an eclipse of the moon, darkness and wind.

288. An earthquake which lasted for some days.

289. In Rejeb at Bagdad, it lasted for some days.

On the day of Arafat which fell in summer, the wind was so cold, that the people were obliged to dress in furs.

300. A mountain split at Dinawar, and streams of water gushed out from it, which submerged many villages. A star split into three pieces, and this was followed by a frightful noise.

331. At Nesa many buildings tumbled down, and many people perished.

344. An earthquake in Egypt; it lasted three hours, and did great damage.

345. An earthquake at Hamadan, many lives were lost.

346. An earthquake at Rai and about that town, it lasted 40 days, then it discontinued for sometime, but it again returned. It extended to Talikán, and there sunk 150 villages belonging to Rai. At Rai a mountain sunk, and an enormous chasm opened from which water and smoke gushed out.

347. An earthquake at Komm, Holwan, Kaman and Jebal, many people perished; at the same time Bagdad suffered from an earthquake.

During the reign of Kafur the Akhshidian, repeated shocks of earthquakes visited Egypt within the space of six months.

362. Several castles in Syria were ruined by an earthquake.

363. At Wasit.

376. Many persons perished under the ruins caused by an earthquake.

393. In Syria, Abasim, and the Greek frontier, many castles were ruined by an earthquake.

398. In Shaban at Dinawar 10,000 persons perished under the ruins, besides those swallowed up by the ground. An inundation took place at Shiraz, and many ships were wrecked at sea.

During the reign of El-Hakim El-Obeidi, who ruled from 386 to 411 in Egypt, several earthquakes took place.

425. Many earthquakes took place in Egypt and Syria, by which one-third of Ramlah was destroyed. The walls of Jerusalem fell down, and many villages were swallowed up by the ground.

434. At Tebris, the fortress and the town were nearly destroyed by an earthquake, and about 40,000 persons perished. Many also perished at Tadmor and Balbek by the same cause.

438. Khelat and Diarbekr.

444. An earthquake in Ahwaz, by which much destruction was caused.

450. In the month of Shaban an earthquake at Bagdad, which extended to Hamadan and Tekrit.

455. Sha'ban; at Wasit, Antiochia, Laodicea, Sul, Akka and over all Syria. The walls of Tripolis were destroyed.

458. Jomadal Akhr in Khorassan, mountains were split, and many villages sunk under the inhabitants; some saved themselves by taking refuge in the open fields. Soyuti gives a copy of the document which was sent to Bagdad on this occasion. The earthquake is thus described:—"It caused the mountains to split; it cleft hills, overturned towns together with their inhabitants, and it levelled them with the ground in such a way that but few people escaped. Most buildings lay in ruins, and it is impossible to ascertain the number of those who perished."

تصدعت منها الجبال وتشققت منها التلال وانقلبت القرى
بأهلها واستوصلت من أصلها ولم يسلم من ساكنها إلا القليل
وخرّب أكثر بنيان البلد وهلك خلق لا ياتي عليهم العدد

460. Tuesday 11th Jomadalawwal, an earthquake in Palestine : Ramla was destroyed. It extended to the Hejaz. It reached also Wadi El-Szafr, Khaiber, Bedr, Yanba, Wadi-kora, Teima and Tabuk, and it extended as far as Kufa ; only two houses of Ramla remained, 25,000 persons perished. 'Aila was destroyed with all its inhabitants, the earthquake was also felt at Jerusalem. The sea receded from the coast, but soon returned again into its place. In all these countries it was felt at the same hour.

462. Tuesday 11th Jomadalawwal at Ramla, and its dependencies, Jerusalem and Egypt. One corner of the principal mosque of Cairo gave way ; it was immediately succeeded by two other earthquakes.'

464. The earth trembled six times at Bagdad in one earthquake.

478. In Moharrem there was an earthquake at Arjan, under which many Greeks perished.

479. In Irak, in Mesopotamia and in Syrā, many buildings were destroyed by an earthquake.

484. In Syria and elsewhere, many buildings, ninety villages, and the walls of Antiochia were destroyed by an earthquake.

508. In Mesopotamia thirteen villages belonging to Roha were destroyed, and part of the walls of Harran ; also in Elsun about 100 houses and one-half of the fortress were destroyed.

511. In the days of Arafat were many houses destroyed at Bagdad.

513. The 5th of Ramadan Kazwin was destroyed by an earthquake which returned the following year precisely at the same time.

515. In the Hejaz.

516. At Jannezah part of its wall sunk.

524. Rabi 1st, at Bagdad, many houses were destroyed.

529. At Bagdad several shocks ; it began on Thursday the 11th of Shawal and lasted the whole day, amounting to six shocks until Friday night. On the 17th, three shocks took place from midnight till day-break.

532. An earthquake in Syria, Mesopotamia and Irak ; many persons were buried under the ruins

533. At Jannezah 130,000 persons lost their lives. Jannezah sunk, and the spot was covered with black water for the distance of ten farsangs ; also Aleppo suffered eighty shocks in one night. It was felt over all the world, but strongest in Aleppo.

538. On the 14th of Zu-l-ka'de, which fell on a Tuesday, was a great earthquake over all the world.

544. At Bagdad about ten shocks were felt, and a mountain fell near Holwan; the Turkomans suffered greatly.

549. A great fiery wind blew one evening: every body believed that the last day was come; this was succeeded by an earthquake; the water of the Tigris disappeared for a while, but made again its appearance.

550. An earthquake at Bagdad.

552. In Syria, the greater part of Aleppo was destroyed; there suffered also Hamat, Shaizar, Emessa, Hisn al Akrad (the fort of the Kurds,) Laodicea, Antiochia. In Shaizar only one woman and a slave were saved.

In Kafertàb not one individual was saved. In Affania the castle was swallowed up, and many towns of the Franks suffered. The walls of several towns of Syria were destroyed; the children perished in the schools, and no one came to ask for them.

551. And the following year several earthquakes took place in Syria.

551. In the night of Rabi 2nd, was a great earthquake. It was preceded and followed by others. In the night of the 25th, at Aleppo, Hamat, and many other places, there were about forty shocks. It was one of the most tremendous earthquakes. On the 29th of the same month, an earthquake took place towards the end of the day, and continued during the night.

The *first* of Ramazan three shocks.

On the *third* of the same month three earthquakes; one at noon, the others at midnight.

In the middle of Ramazan there was an earthquake at night, and another in the morning, and two during the following night, and another shock the subsequent day. In the night of the 23d of Ramazan and in the second of Shawal, new shocks of earthquakes were felt which were more violent than the preceding ones, there were also earthquakes on the 7th, 16th and 17th, and in the night of the 22d.

552. In the night of 19th of Safr, a great earthquake took place which was followed by another shock; a third one took place in the night of the 20th, and the following day in Syria. In the night of the 25th Jomada 1st, four shocks. In the night of the 4th of Jomada 2d, several shocks,

particularly at Aleppo and Emessa, where they were destructive ; also in Hamat, Kafertab, and Taima. In the 4th of Rajeb at day time at Damascus it was so violent, that never the like had been seen ; it caused some destruction. In the night of Friday the 8th of Rajeb there were three earthquakes, which were followed by other earthquakes on Saturday, Sunday and Monday night, and several shocks after that. It did great damage in Hamat, Shiraz, and Emessa. In Damascus it did not begin before Monday the 29th of Rejeb, but caused great consternation. Another earthquake took place on the 24th of Ramazan, which was terribly felt at Aleppo, and Hamat (Apamea,) where it continued for sometime with intermissions. In the night of Saturday the 10th of Shawal and in the night of the 10th of Dilkada, and on the night of the 23d and 25th of the same month, people were so frightened by earthquakes, that they took refuge in the fields. Apamea was destroyed.

565. An earthquake in Syria, Mesopotamia and almost all the world ; it destroyed many walls and houses in Syria, more particularly at Damascus, Emessa, Apamea, Aleppo and Balbek.

574. In Armenia and in the country of Irbil.

575. A great earthquake.

592. Great wind over all the world, and an earthquake in Egypt.

593. A large star was split, and a tremendous noise was caused by it, which made the earth tremble. This took place on Friday the 9th of Jomada 2d.

597. In Shawan, there was an earthquake almost over all the world, more particularly in Upper Egypt, where it caused great destruction ; it extended over Syria and the sea, Mesopotamia, the Greek Empire and Irak ; it was particularly destructive in Syria. It was also felt in Armenia, Azerbaijan, and it is calculated that through this earthquake 1,100,000 lives were lost. The first shock lasted but a short time, but after that it continued for several days, and it seems that it came from Mesopotamia to the sea-coast.

578. In Shaban at Emessa, the castle of the Kurds was destroyed ; it extended as far as Nablus.

600. An earthquake in Egypt, Mesopotamia, Syria, Mausil, Irak, the Greek Empire and Cyprus ; it extended as far as Sabta in the Maghrib.

605. An earthquake at Nishapur, which lasted ten days.

608. In Egypt and Cairo many persons lost their lives, and great smoke arose west of Damascus.

623. On Monday, on the new moon of the latter Jomada, a noise was heard about Medina for two days, which was followed by a great earthquake, which caused great destruction.

657. In Egypt.

661. Mausil.

662. In Egypt.

667. In Sus, by which many castles were destroyed and many lives lost.

692. In the month of Safr at Ramla, Fakul and El-Kerk three villages were destroyed.

693. In Egypt.

702. On the 23d Dhillajj, Thursday, in Egypt and Syria, many persons were buried under the ruins, and all Alexandria was submerged under the sea.

722. In Mohurru at Damascus at night.

729. In Rajeb, at Tripolis and in Syria.

744. In Egypt and Syria.

741. On the 4th of Ramazan, two shocks in one hour at Cairo.

775. A slight earthquake at Cairo.

787. On the 13th of Shaban, slight earthquake at Cairo and Egypt.

788. The 18th Jomada 2nd, a slight earthquake.

791. Sufr at Nishapur, violent wind and earthquake; many souls lost.

Nishapur was seven times destroyed by earthquakes, but this time was the worst.

Aleppo and its dependencies suffered from earthquakes on Jomada 2nd, and Shawan and Jomada 1st; and besides that several times in the same year.

809. An earthquake in Antiochia, many lives lost.

811. In Shaban about Aleppo and Tripolis, many lives lost by earthquakes

822. At Arzangán ارزنگان and Constantinople.

825. At Cairo.

828. In Shaban, in Egypt, three shocks in one day.

834. In Shaban, at Granada, and in Spain.

838. In Rabi 2d at Cairo.
 841. In Shaban at Cairo, a slight earthquake.
 861. At Arzangán, the most part of which was destroyed.
 863. At Kerk 100 lives lost by an earthquake.
 881. In Egypt a slight earthquake at night.
 880. 17th of Mohurrum, at noon, a violent earthquake in Egypt.
 888. The 9th of Jomada 1st, on Sunday, a slight earthquake.
 889. Rabi 1st, six or more terrible shocks at Aleppo.
 896. 12th Jomada 2d, on Sunday, a slight earthquake in Egypt.
 905. The night of Friday 27th Dilhajj, a slight earthquake.

*A general Statement of the Weather at Kotjurh and Soobathoo, for
 1819-20-21. By Captain PATRICK GERARD.*

Clear,	..	..	..	..	..	..	16 days
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	8 „
Rainy and stormy, snow and hail,	..	..	..	..	..	..	7 „
Thunder,	..	..	..	..	..	..	none.

Height of the Barometer.

			Inches.	Thermometer.
Maximum,	..	..	23.740	45°
Minimum,	..	●..	23.415	31°
Mean,	..	...	23.592	38°
Temperature of the air.			Temperature of the house.	
Maximum,	..	No.	Maximum,	.. 45°
Minimum only,	..	23° 1'	Minimum,	.. 31°
Mean,	..	No.	Mean,	.. 38°

Prevailing wind during the month, westerly, but generally very variable.

A general Statement of the Weather at Kotjurh, for February, 1819.

Clear,	..	..	..	...	...	...	11 days
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	8 „
Rainy and stormy, snow and hail,	..	..	..	..	..	..	9 „
Thunder,	..	..	...	..	..	●..	1 „

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	23.810	44° 5'
Minimum,	..	..	..	23.535	39° 1'
Mean,	..	..	..	28.672	41° 8'
Temperature of the air.				Temperature of the house.	
Maximum,	..	45° 6'		Maximum,	.. 47° 8'
Minimum,	..	27° 2'		Minimum,	.. 37° 7'
Mean,	..	36° 4'		Mean,	.. 2° 7'
Prevailing wind during the month easterly, but variable.					

A general Statement of the Weather at Soobathoo, for March 1819.

Clear,	..	..	..	..	..	..	18 days.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	10 „
Rainy and stormy,	..	..	..	..	..	..	3 „
Thunder,	..	..	..	..	..	..	3 „

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	26.110	68°
Minimum,	..	..	..	25.640	62° 7'
Mean,	..	..	..	25.875	65° 3'
Temperature of the air.				Temperature of the house.	
Maximum,	..	80°		Maximum,	.. 73° 5'
Minimum,	..	47°		Minimum,	.. 50°
Mean,	..	63° 5'		Mean,	.. 61° 7'
Prevailing wind during the month, south-westerly.					

A general Statement of the Weather at Soobathoo, for April 1819.

Clear,	..	..	..	..	..	..	15 days.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	10 „
Rainy and stormy,	..	..	..	..	..	..	5 „
Thunder,	..	..	..	..	..	..	4 „

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	26.015	76° 2'
Minimum,	..	..	..	25.650	6° 5'
Mean,	..	..	..	25.832	70° 6'
Temperature of the air.				Temperature of the house.	
Maximum,	..	88°	Maximum,	..	80° 5'
Minimum,	..	48°	Minimum,	..	61°
Mean,	..	68°	Mean,	..	70° 7'

Prevailing winds during the month, south-west and south south-west.

A general Statement of the Weather at Kotgurh, for May 1819.

Clear,	...	..	..	..	..	..	12 days.
Fair, but cloudy and partially cloudy,		..	..	..	..	..	5 „
Rainy, stormy and hail,		..	..	..	..	..	14 „
Thunder,	..	..	..	..	..	..	8 „

No Barometer up.

Temperature of the air.				Temperature of the house.			
Maximum,	..	No.	Maximum,	..	69°		
Minimum only,	..	42°	Minimum,	..	55° 3'		
Mean,	..	.. No.	Mean,	..	62° 1'		

Prevailing winds during the month, west and south-south-west.

A general Statement of the Weather at Soobathoo, for June 1819.

Clear,	..	..	..	..	..	..	9 days.
Fair, but cloudy and partially cloudy,		..	..	..	..	..	11 „
Rainy and stormy,	..	..	..	..	..	..	10 „
Thunder,	..	..	..	..	..	..	8 „

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	25.980	85°
Minimum,	..	..	..	25.640	77° 5'
Mean, ..	..	..	..	25.810	81° 2'

Temperature of the air.

Maximum,	..	93°
Minimum,	..	65°
Mean,	..	79°

Temperature of the house.

Maximum,	..	86°
Minimum,	..	70°
Mean,	..	78°

Prevailing winds during the month, west and south-west, and south south-west.

A general Statement of the Weather at Kotgurh, for July 1819.

Clear,	..	..	..	..	..	..	2 days.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	10 „
Rainy and stormy,	..	..	..	..	..	..	19 „
Thunder,	..	..	..	..	..	..	6 „

Height of the Barometer.

				Inches.	Thermometer,
Maximum,	..	..	..	23.730	73° 9'
Minimum,	..	..	..	23.535	68° 1'
Mean,	..	..	..	23.632	71°

Temperature of the air.

Temperature of the house.

Maximum,	..	No.	Maximum,	..	74° 9'
Minimum only,	..	55° 9'	Minimum,	..	63° 5'
Mean,	..	No.	Mean,	..	69° 2'

Prevailing winds during the month, east and east south-east.

A general Statement of the Weather at Kotgurh, for August 1819.

Clear,	..	..	..	..	..	..	1 day.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	10 „
Rainy and stormy,	..	..	..	..	..	..	20 „
Thunder,	..	..	..	..	..	..	5 „

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	23.765	72° 9'
Minimum,	..	..	..	23.500	66° 5'
Mean,	23.632	69° 7'

Temperature of the air.

Temperature of the house.

Maximum,	..	No.	Maximum,	..	73° 7'
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Minimum only, .. 57° 1' Minimum, .. 64° 2'

Mean, No. Mean, .. 68° 9'

Prevailing winds during the month, easterly.

A general Statement of the Weather, for September 1819.

Absent this month on a tour into the interior, but Thermometrical observations were daily taken and recorded at every place during the journey.

Clear, 2 days'

Fair, but cloudy and partially cloudy, 6 „

Rainy and stormy. 22 „

Thunder, 4 „

The prevailing winds during the month, easterly.

A general Statement of the Weather, for October 1819.

Still absent all this month on a tour into the interior.

Clear, 19 days.

Fair, but cloudy and partially cloudy, 6 „

Rainy and stormy, snow and hail, 6 „

Thunder, none.

Prevailing winds during the month, westerly.

A general Statement of the Weather at Kotgurh, for November 1819.

Clear, 23 days'

Fair, but cloudy and partially, cloudy, 4 „

Rainy, and stormy and snow, 3 „

Thunder, 1 „

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	23.820	50°
Minimum,	..	..	..	23.600	46°
Mean,	..	..	..	23.610	48°

Temperature of the air.

Temperature of the house.

Maximum, .. No. Maximum, .. 51°

Minimum, .. 34° Minimum, .. 45°

Mean, No. Mean, .. 48°

Prevailing winds during the month, westerly.

A general Statement of the Weather at Kotgurh, for December 1819.

Clear,	11 days.
Fair, but cloudy and partially cloudy.	13 „
Rainy, stormy and snow,	7 „
Thunder,	1 „

Height of the Barometer.

	Inches.	Thermometer.
Maximum,	23.900	48° 5'
Minimum,	23.600	43°
Mean,	23.750	45° 7'

*Temperature of the air.**Temperature of the house.*

Maximum, .. No.	Maximum, ..	50°
Minimum, .. 30° 5'	Minimum, ..	42° 8'
Mean, No.	Mean,	46° 4'

Prevailing winds during the month, easterly.

A general Statement of the Weather, for 1819.

1819.	Clear. days.	Fair, days.	Rainy, stormy, snow and hail days.	Thun- der days.
January,	16	8	7	none.
February,	11	8	9	1
March,	18	10	3	3
April,	15	10	5	4
May,	12	5	14	8
June,	9	11	10	8
July,	2	10	19	6
August,	1	10	20	
September,	2	6	22	
October,	19	6	6	none.
November,	23	4	3	1
December,	11	13	7	1
Total,	139	101	125	41

NOTE.—In the absence of the Maximum Temperature of the air for some of the months, the Mean Temperature of the house will nearly come to the same result as if the Maximum Temperature of the air had been ascertained and recorded. Indeed in the course of many years' observations, the difference between the Mean Temperature of the air and that of the house, if any thing, is so trifling, that it is hardly deserving of notice.

A general Statement of the Weather at Kotgurh, for January, 1820.

Clear,	26 days.
Fair, but cloudy and partially cloudy,	3 „
Rainy and stormy,	2 „
Thunder,	2 „

Height of the Barometer.

	Inches.	Thermometer.
Maximum,	23·720	42°
Minimum,	23·570	41°
Mean,	23·645	41° 5'
Temperature of the air.		Temperature of the house.
Maximum, .. No.	Maximum, ..	34°
Minimum, only .. 30° 5'	Minimum, ..	36°
Mean, No.	Mean, ..	39° 5'
Prevailing winds during the month, east, south-east and north-east.		

A general Statement of the Weather at Kotgurh, for February, 1820.

Clear,	14 days.
Fair, but cloudy and partially cloudy,	6 „
Rainy and stormy, snow and hail,	9 „
Thunder,	2 „

Height of the Barometer.

	Inches.	Thermometer.
Maximum,	23·760	48°
Minimum,	23·400	42° 8'
Mean,	23·580	45° 4'
Temperature of the air.		Temperature of the house.
Maximum, .. No.	Maximum, ..	48° 2'
Minimum, only 27°	Minimum, ..	40°
Mean, .. No.	Mean, ..	44° 1'
Prevailing wind during the month, westerly.		

A general Statement of the Weather at Kotgurh, for March 1820.

Clear,	16 days.
Fair, but cloudy and partially cloudy,	6 „

Rainy and stormy, snow and hail,	..	..	..	9	„
Thunder,	..	..	..	4	„

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	23·860	54°
Minimum,	..	..	..	23·600	46°
Mean,	..	..	..	23·730	50°
Temperature of the air.				Temperature of the house,	
Maximum,	..	No.		Maximum,	.. 54° 6'
Minimum,	only	.. 37° 5'		Minimum,	.. 46°
Mean,	..	No.		Mean,	.. 50° 3'

Prevailing winds during the month, westerly.

A general Statement of the Weather at Kotgurh for April 1820.

Absent all this month on a tour through the protected hill states, situate between the rivers Sutluj and Jumna, on the hither or Indian side of the Himalaya range, but observations were daily taken and recorded during the journey.

Clear,	..	..	..	..	..	13 days.
Fair, but cloudy and partially cloudy,	.	..				4 „
Rainy, stormy and hail,	..	..	..	..		13 „
Thunder,	..	..	..	..	..	6 „

Prevailing winds during the month, westerly.

A general Statement of the Weather at Kotgurh for May, 1820.

Clear	..	..	..	..	..	13 days.
Fair, but cloudy and partially cloudy,	..	..				8 „
Rainy, stormy, and hail,	..	..	..	..		10 „
Thunder,	..	..	..	..	..	8 „

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	●	23·800	64°
Minimum,	..	..	..	23·520	65° 9'
Mean,	..	..	..	23·660	64° 9'

Temperature of the air.

Maximum, .. No.

Minimum, only 45°

Mean, .. No.

Temperature of the house.

Maximum, .. 73° 4'

Minimum, .. 58°

Mean, .. 65° 7'

Prevailing winds during the month, westerly.

A general Statement of the Weather at Kotgurh, for June 1820.

Clear,	7 days.
Fair, but cloudy and partially cloudy	9 „
Rainy, stormy and hail,	14 „
Thunder,	6 „

Height of the Barometer.

	Inches.	Thermometer.
Maximum,	23·700	75° 4'
Minimum,	23·440	67° 8'
Mean,	23·570	71° 6'

Temperature of the air.

Maximum, .. 87° 4'

Minimum, .. 54°

Mean, .. 70° 7'

Temperature of the house.

Maximum, .. 77° 1'

Minimum, .. 63°

Mean, .. 70°

Prevailing winds during the month, partly westerly and partly easterly.

A general Statement of the Weather at Kotgurh, for July 1820.

Clear,	none.
Fair, but cloudy and partially cloudy,	3 days.
Rainy and stormy,	28 „
Thunder,	2 „

Height of the Barometer.

	Inches.	Thermometer.
Maximum,	23·730	70° 6'
Minimum,	23·440	65°
Mean,	23·585.	67° 8'

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Temperature of the air.

Maximum,	..	81° 8'
Minimum,	..	57° 7'
Mean,	..	69° 7'

Temperature of the house.

Maximum,	..	76°
Minimum,	..	64° 4'
Mean	..	70° 2'

Prevailing winds during the month, easterly.

A general Statement of the Weather at Kotgurh, for August 1820.

Clear,	..	..	..	..	..	..	..	none.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	..	8 days.
Rainy and stormy,	.	..	..	..	..	..	..	23 „
Thunder,	..	..	..	..	..	..	..	2 „

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	23·710	69° 7'
Minimum,	..	..	..	23·515	69°
Mean,	..	..	..	23·612	69° 3'

Temperature of the air.

Maximum,	..	77° 8'
Minimum,	..	56° 5'
Mean,	..	67° 1'

Temperature of the house.

Maximum,	..	74°
Minimum,	..	64° 6'
Mean,	..	69° 3'

Prevailing winds during the month, easterly,

A general Statement of the Weather at Kotgurh, for September 1820.

Clear,	..	..	..	..	..	..	..	5 days.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	..	11 „
Rainy and stormy,	.	..	..	..	..	..	..	14 „
Thunder,	..	..	..	..	..	..	..	2 „

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	23·705	69° 4'
Minimum,	..	..	..	23·505	67°
Mean,	..	..	..	23·605	68° 2'

Temperature of the air.

Maximum,	..	73° 7'
Minimum,	..	60° 7'
Mean,	..	67° 2'

Temperature of the house.

Maximum,	..	75° 9'
Minimum,	..	52° 8'
Mean,	..	64° 3'

Prevailing winds during the month. easterly.

A general Statement of the Weather at Kotgurh, for October 1820.

Clear,	..	..	..	..	..	..	20	days.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	5	„
Rainy and stormy,	..	..	..	..	..	..	6	„
Thunder,	..	..	..	..	..	..	3	„

Height of the Barometer.

	Inches.	Thermometer.
Maximum,	.. 23·835	58°
Minimum,	.. 23·535	62° 4'
Mean,	.. 23·685	60° 2'

Temperature of the air.

Maximum,	... 71°
Minimum,	.. 43° 8'
Mean	.. 57° 4'

Temperature of the house.

Maximum,	.. 68° 2'
Minimum,	.. 52°
Mean,	.. 60° 1'

Prevailing winds during the month, easterly and westerly.

A general Statement of the Weather at Rampoor, for November 1820.

No Barometer with me.

Clear,	..	..	..	..	..	..	18	days.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	7	„
Rainy and stormy,	.. ●	..	..	..	..	..	5	„
Thunder,	..	..	..	..	..	..	1	„

Temperature of the air.

Maximum,	.. 78° 4'
Minimum,	.. 37° 6,
Mean,	.. 58°

Temperature in a tent.

Maximum,	.. 79°
Minimum,	.. 54°
Mean,	.. 66° 5'

Prevailing winds during the month at this place, south-west and south south-west.

A general Statement of the Weather, at Rampoor for December 1820.

Clear,	..	..	..	..	..	..	17 days.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	10 „
Rainy, stormy and snow,	..	..	..	..	..	..	4 „
Thunder,	..	..	..	..	..	..	none.

Temperature of the air.

Temperature in a tent.

Maximum, .. 72° 7'

Maximum, .. No.

Minimum, .. 32° 7'

Minimum, only 39°

Mean, 52° 7'

Mean, .. No.

Prevailing winds during the month at this place, south-west and south south-west.

A general Statement of the Weather for 1820.

1820.	Clear days.	Fair days.	Rainy and stormy, snow and hail days.	Thunder days.
January,	26	3	2	2
February,	14	6	9	2
March,	16	6	9	4
April,	13	4	13	6
May,	13	8	10	8
June,	7	9	14	6
July,	none	3	28	2
August,	ditto	8	23	2
September,	5	11	14	2
October,	20	5	6	3
November,	18	7	5	1
December,	17	10	4	none
Total,	149	80	137	38

Note.—Having been obliged to proceed to and remain at this place on duty, it may be as well to mention, that Rampoor is a small town and the capital of Bussahir, about 22 miles beyond the military outpost of Kotgurh, situate on the left bank of the Sutlej, and the winter residence of the Rajah of that state. It is in latitude 31° 27' and longitude 77° 38' and its elevation above the level of the sea by Barometrical observation is 3,398 feet.

*A general Statement of the Weather at Kotgurh, for January 1821.**No Barometer up.*

Clear,	11 days.
Fair, but cloudy and partially cloudy,	12 „
Rainy, stormy, snow and hail,	8 „
Thunder, ●.	none.

Temperature of the air.

Temperature of the house.

Maximum, .. 52° 2'

Maximum, .. 47° 8'

Minimum, .. 28° 4'

Minimum, .. 36° 8'

Mean, 40° 3'

Mean, .. 42° 3'

Prevailing winds during the month, westerly.

A general Statement of the Weather at Kotgurh, for February 1821.

Clear,	11 days.
Fair, but cloudy and partially cloudy,	14 „
Rainy, stormy and hail,	3 „
Thunder,	2 „

Temperature of the air.

Temperature of the house.

Maximum, .. 68° 7'

Maximum, .. 59°

Minimum, .. 29°

Minimum, .. 37°

Mean, .. 48° 8'

Mean, .. 48°

Prevailing winds during the month, partly west and partly east.

A general Statement of the Weather at Soobathoo, for March 1821.

Clear,	18 days.
Fair, but cloudy and partially cloudy,	5 „
Rainy, stormy and hail,	8 „
Thunder,	4 „

Height of the Barometer.

	Inches.	Thermometer.
Maximum,	26.105.	71° 3'
Minimum,	25.780.	59° 8'
Mean,	25.942.	65° 5'

Temperature of the air.

Maximum, ..	78° 5'
Minimum, ..	48° 3'
Mean, ..	63° 4'

Temperature of the house.

Maximum, ..	73°
Minimum, ..	56°
Mean, ..	64° 5'

Prevailing wind during the month, westerly.

A general Statement of the Weather at Soobathoo, for April 1821.

Clear, .. .. .	.. .. .	18 days.
Fair, but cloudy and partially cloudy, .. .. .	.. .. .	9 „
Rainy, stormy and hail, .. .. .	.. .. .	3 „
Thunder, .. .. .	.. .. .	4 „

Height of the Barometer.

	Inches.	Thermometer.
Maximum,	26·200.	73°
Minimum,	25·850.	67° 8'
Mean,	26·025.	70° 4'

Temperature of the air.

Maximum, ..	87° 4'
Minimum, ..	54° 5'
Mean, ..	70° 9'

Temperature of the house.

Maximum, ..	81° 4'
Minimum, ..	64° 8'
Mean, ..	73° 1'

Prevailing winds during the month, west and south-west.

A general Statement of the Weather at Kotgurh, for May 1821.

Clear, .. .. .	.. .. .	15 days.
Fair, but cloudy and partially cloudy, .. .. .	.. .. .	6 „
Rainy, stormy and hail, .. .. .	.. .. .	10 „
Thunder, .. .. .	.. .. .	10 „

Height of the Barometer.

	Inches.	Thermometer.
Maximum,	23·670.	82° 7'
Minimum,	23·530.	64° 5'
Mean,	23·600.	73° 6'

Temperature of the air.

Maximum, ..	85°
Minimum, ..	50° 2'
Mean, ..	67° 6'

Temperature of the house.

Maximum, ..	82° 7'
Minimum, ..	63° 6'
Mean, ..	73° 1'

Prevailing winds during the month, westerly.

A general Statement of the Weather at Kotgurh, for June 1821.

Clear,	18 days.
Fair, but cloudy and partially cloudy,	4 „
Rainy and stormy,	8 „
Thunder,	5 „

Height of the Barometer.

	Inches.	Thermometer
Maximum,	23·795.	75°
Minimum,	23·480.	72° 3'
Mean,	23·637.	73° 6'

Temperature of the air.

Maximum, ..	88° 4'
Minimum, ..	56°
Mean, ..	72° 2'

Temperature of the house

Maximum, ..	81° 3'
Minimum, ..	65° 4'
Mean, ..	73° 3'

Prevailing wind during the month, westerly.

A general Statement of the Weather at Kotgurh, for July 1821.

Clear,	none.
Fair, but cloudy and partially cloudy,	10 days.
Rainy and stormy,	21 „
Thunder,	5 „

Height of the Barometer.

	Inches.	Thermometer.
Maximum,	23·760.	73° 7'
Minimum,	23·470.	70°
Mean,	23·615.	71° 8'

Temperature of the air.

Maximum,	..	85° 3'
Minimum,	..	59° 4'
Mean,	..	72° 3'

Temperature of the house.

Maximum,	..	81° 5'
Minimum,	..	66°
Mean,	..	73° 7'

Prevailing winds during the month, west and east-north-east.

A general Statement of the Weather at Kotgurh, for August 1821.

Clear,	..	..	..	..	..	..	..	none.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	12	„
Rainy and stormy,	..	..	..	..	..	..	19	„
Thunder,	..	..	..	..	..	..	2	„

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	23·695.	73°
Minimum,	..	..	..	23·530.	66° 2'
Mean,	..	..	..	23·612.	69° 6'
Temperature of the air.				Temperature of the house.	
Maximum,	..	75°		Maximum,	.. 75° 1'
Minimum,	..	58°		Minimum,	.. 62°
Mean,	..	66° 6'		Mean,	.. 68° 5'

Prevailing winds during the month, north-east and east-north-east.

A general Statement of the Weather at Kotgurh, for September 1821.

Clear,	..	..	..	..	..	..	6 days.
Fair, but cloudy and partially cloudy,	..	..	..	..	..	..	8 „
Rainy and stormy,	..	..	..	..	..	..	16 „
Thunder,	..	..	..	..	..	..	3 „

Height of the Barometer.

				Inches.	Thermometer
Maximum,	..	..	..	23·875.	69° 6'
Minimum,	..	..	..	23·680.	59° 6'
Mean,	..	..	..	23·777.	64° 6'

Temperature of the air.

Temperature of the house.

Maximum, .. 76° 3'

Maximum, .. 75° 5'

Minimum, .. 48° 7'

Minimum, .. 48° 5'

Mean, .. 62° 5'

Mean, .. 62°

Prevailing winds during the month, west and east-north-east.

A general Statement of the Weather at Kotgurh, for
October 1821.

Clear,	25 days.
Fair, but cloudy and partially cloudy, .	1 „
Rainy and stormy,	5 „
Thunder,	1 „

Height of the Barometer.

				Inches.	Thermometer
Maximum,	..	..	..	23·930.	63°
Minimum,	..	..	..	23·650.	55°
Mean,	..	..	..	23·790.	59°
Temperature of the air.				Temperature of the house.	
Maximum,	..	67°		Maximum,	.. 66° 7'
Minimum,	..	41° 4'		Minimum,	.. 51°
Mean,	..	54° 2'		Mean,	.. 58° 8'
Prevailing winds during the month, west and east-north-east.					

A general Statement of the Weather at Kotgurh, for
November 1821.

Clear,	19 days.
Fair, but cloudy and partially cloudy,	9 „
Rainy and stormy,	2 „
Thunder,	none.

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	23·860.	58° 6'
Minimum,	..	..	..	23·600.	49°
Mean,	..	..	..	23·730.	53° 8'
Temperature of the air.				Temperature of the house.	
Maximum,	..	59° 8'		Maximum,	.. 59°
Minimum,	..	42°		Minimum,	.. 48° 3'
Mean,	..	50° 9'		Mean,	.. 53° 6'
Prevailing winds during the month, west and south-west.					

A general Statement of the Weather at Soobathoo, for
December 1821.

Clear,	..	..	..	..	..	..	14 days.
Fair, but cloudy and partially cloudy,				..	..	..	12 „
Rainy and stormy, snow and hail,	..	..	..	..	..	..	5 „
Thunder,	..	..	..	..	..	..	1 „

Height of the Barometer.

				Inches.	Thermometer.
Maximum,	..	..	..	26·100.	59° 6'
Minimum,	..	..	..	25·900.	52°
Mean,	..	..	..	26·000.	55° 8'
Temperature of the air.				Temperature of the house.	
Maximum,	..	66°		Maximum,	.. 59° 6'
Minimum,	..	39° 5'		Minimum,	.. 49°
Mean,	..	52° 7'		Mean,	.. 54° 3'
Prevailing winds during the month, west and south-west.					

A general Statement of the Weather, for 1821.

1821.	Clear days.	Fair days.	Rainy and stormy, snow and hail days.	Thunder days.
January,	11	12	8	none.
February, ..	11	14	3	
March, ..	18	5	8	
April, ..	18	9	3	
May, ..	15	6	10	
June, ..	18	4	8	
July, ..	none.	10	21	
August, ..	none.	12	19	
September, ∴	6	8	16	
October, ..	25	1	5	
November, ..	19	9	2	none.
December, ..	14	12	5	1
Total,	155	102	108	38

Note.—It appears necessary here to remark, that during the years 1819-20 and 21, Simla was no place of resort for invalids and visitors, except for few officers belonging to the 1st Nussereee Battalion stationed at Soobathoo, and thither they proceeded for the hottest months, May and June, till the rains had fairly set in. In 1819, a double-poled tent was pitched by Lieutenant, now Lieutenant Colonel R. Ross, on the north-west extremity of the ridge, immediately above the small village of Simla, and afterwards thatched over, having for its walls, spars, grass and mud as a protection from the weather, and being on the site of the Commander-in-Chief (Sir H. Fane's,) now Major General Lumley's house. In 1822, the first permanant cottage, of the usual materials, stone and timber, roofed with pine wood shingles, was erected on a rising ground on a small height on the same ridge by Captain, now Major C. P. Kennedy, the successor of Lieutenant R. Ross, as Assistant Political Agent for the Protected Hill States, and although the out-post of Kotgurh is 650 or 700 feet lower in elevation than Simla, being four long marches beyond it, and further into the interior, and not subject to the influence of the plains, which Simla is in a more or less degree, yet the temperature at Kotgurh for the above years will give a very fair notion of that which may be generally experienced at Simla, as in subsequent years, on comparison, the average temperature of the former place, proved only to be a trifle lower than that observed and recorded at the latter.

Meteorological Register kept at Kathmandoo, Valley of Nepal. By Captain G. H. ROBINSON, for the month of March 1834.

March 1834.	Thermometer inside.				Thermometer outside.				Barometer with Ther. attached.				Range of		Range of Ther. in- moneter in- side.	Range of Ther. moneter out- side.	Rain
	8	10	2	4	8	10	2	4	8	10	2	4	Bar	Ther. attach- ed.			
1	62	78	63	63	25.12	25.07	24.997	24.997	.008	9	5	...	...	...	...	...	...
2	61	60	61	62	25.024	25.014	25.006	25.006	.012	10	2	...	...	...	...	...	...
3	61	60	61	62	25.031	25.021	25.006	25.006	.014	11	4	...	...	...	...	...	...
4	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
5	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
6	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
7	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
8	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
9	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
10	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
11	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
12	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
13	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
14	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
15	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
16	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
17	62	68	62	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
18	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
19	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
20	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
21	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
22	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
23	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
24	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
25	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
26	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
27	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
28	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
29	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
30	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...
31	60	69	61	62	25.031	25.021	25.006	25.006	.014	10	4	...	...	...	...	...	...

.677

Rain 3 days.

Supplementary Note to Mr. Commissioner LUSHINGTON'S Report on the Copper Mines of Kemaon and Ghurwal, Journal, p. 472.

Since the above report was submitted to Government in 1841, I have had the pleasure of meeting and forming the acquaintance of Captain Drummond, (late one of the Cabool hostages,) to whom allusion is made in the first part of the report, as having suggested the experimental working of the Pokree mine. Captain Drummond's opinion is, I believe, still favourable to further experiments being made in the Kemaon and Ghurwal mines under European superintendence, and as he has seen and examined all the papers connected with Mr. Wilkin's operations, and knows much more of these matters than I can pretend to do, his opinion is likely to be more correct than mine.

As connected with Mr. Wilkin, there is one important omission in my report, which in justice to him I would wish to supply. I allude to his uniformly kind and conciliating treatment of the Natives, and to the fact of my never having had a single complaint preferred to me by any of them, in the least affecting his character, from the time of his location at Pokree to the date of his departure from the province.

Almora, 29th August, 1843.

G. S. LUSHINGTON.

Note on a Fossil Antelope, from the Dadoopoor Museum. By Capt. W. E. BAKER, Bengal Engineers.

We have had great pleasure in doing full justice, as far as our humble efforts could do so, to this highly interesting notice, in procuring the aid of the best artist in Calcutta, who, our readers may be assured, has given a most exact *fac simile* of Captain Baker's capital pen and ink drawing.—EDS.

Among the notices of the Sub-Himalayan fossils which have from time to time appeared in the Journal of the Asiatic Society, but few have been devoted to the remains of Ruminantia. The Sivatherium indeed was one of the first described, and the Camelidæ subsequently formed the subject of a paper by Capt. Cautley and Dr. Falconer; but the various species of Bos, Cervus, Antelope, &c. which

occur in this deposit more frequently perhaps than any other, have hitherto passed unnoticed.

To supply this deficiency, however, is not my present purpose. I have neither leisure, nor a sufficiently extensive museum of comparative Osteology, to attempt the description, or even the classification of our fossil Ruminants; but it appeared to me to be a circumstance deserving the attention of other enquirers, that there is a strong resemblance between the skulls of some of our Antelopes, and those figured in Capt. Harris's splendid work, "Portraits of Game and Wild Animals in Southern Africa."

The degree of resemblance will be judged from the accompanying plate, in which Fig. 1 and 2, represent a front and side view of one of the fossils above alluded to, about one-fourth the natural size. The face of this fossil is tolerably perfect, excepting the extremities of the intermaxillary bones, but the occipital portion of the head and the tips of the horns are wanting.

Fig. 3 and 4 are similar views of the skull of an Indian Antelope, (*A. cervicapra*), drawn on the same scale.

Fig. 5 and 6 are outlines of the heads respectively of the Hartebeest, (*Acronotus Caama*), and the "Sassaybe," (*Acronotus lunata*), copied from Capt. Harris's plate.

The fossil differs from the Indian Antelope, in the greater elongation of its face, the straightness of its profile, the close juxta-position of its horns at the base; the absence or small development of the infra-orbital sinus, and the small size of the supra-orbital foramina. In all these respects it resembles one or other of the African genera, from the descriptions of which, by Capt. Harris, I have extracted the following:—

Acronotus Caama or Hartebeest. "Head remarkably heavy, narrow and long. Horns seated upon the summit of a beetling ridge above the frontals; very close together, and almost touching at the base. No suborbital sinus, but a constant mucous discharge of a waxy nature."

Acronotus Lunata, or Sassaybe. "Head long, narrow and shapeless; wearing a bubaline appearance, facial line straight. Eyes high in the cranium, indistinct lachrymary perforation."

As far therefore as can be judged from a description which, like the above, has no particular reference to the Osteology of these animals,

they appear to have a considerable resemblance to our fossil. It would be highly interesting, should they be hereafter identified, and should it thus appear that the groups of grotesque Ruminants now apparently confined to the Prairies of Africa, had once a wider distribution. The assemblage in one deposit of animals differing so widely in their forms and habits, and in their adaptations to particular localities, leads irresistibly to the conclusion, that we have before us the delta of a large river, which, in one of the past configurations of our globe, must have collected in its course the various spoils of some extensive continent. No existing river, excepting perhaps the Nile, could unite in one vast cemetery the remains of every known order of terrestrial Mammalia and aquatic reptiles; of the denizens of the forest, the lake and the mud bank, mingled with those of the wide prairie and the sandy desert.

A Ninth Memoir on the LAW OF STORMS IN INDIA; being the Pooree and Cuttack Storms of 2nd, and the Gya and Patna Storms of 5th and 6th October, 1842. By HENRY PIDDINGTON.

I had at first intended to include these storms in my preceding Memoir as a second part, but as, when a storm or storms in different parts of the ocean or on shore can be tolerably well traced, there may be some advantage, particularly when the tracks approach the Sandheads, in keeping the documents apart in different Memoirs and tracing them upon a separate chart. I have preferred doing so in this instance, and I have published the Madras storm first, forming the Eighth Memoir, as being of the two that which was of the highest interest, though the present are of a prior date.

On the 2nd October, the coast about Pooree and Cuttack was visited by a severe storm, which was felt as a gale at the Sandheads to the north, and to about lat. $17\frac{1}{2}$ to the southward. In some parts of its progress it appears to have been excessively severe, and two large ships, at least the *Acasta** and *Imaum Shah*, if not more, foundered within these limits; besides many coasting vessels.

* By an advertisement in the papers it would appear, that a ship of about 300 tons had sunk in eighteen feet water off Juggernath Pagoda about the time of this storm, which was supposed to be the *Acasta* from Madras.

At Calcutta, being at the time very unwell, I could not register any observation ; but those of the Surveyor General's Office are given in their place. It will be seen from the documents and charts, that these storms are a remarkable instance either of two separate storms of small extent coming up together, or, which I am inclined to suppose, a large storm dividing itself into two small ones, and travelling up with great rapidity towards the coast. The grounds for these views will be as usual shewn in the summary which follows the documents and comparative table. The storms at sea were followed on the 5th and 6th of October, by severe inland storms from Gya to Patna, extending to Benares and other places ; but having scarcely any documents from the stations between Cuttack and Gya, we cannot say with any certainty, that the two sets of storms were connected.

Abridged Log of the Ship Essex, Captain W. H. BROWN, from Madras to Calcutta, Civil time. Barometer corrected to that at the Surveyor General's Office. From the Marine Board.

The *Essex* left Madras on the 29th September 1842, and reached lat. (by account) 16°, long. 83° 50' E. by noon on 1st October, having had variable winds.

p. m. Cloudy ; 6, squally with rain, much lightning to N. W. ; 8, squally, very vivid lightning from N. W. to N. E. Dense black clouds to northward ; 9, wind W. N. W. wind increasing and cross sea rising ; 10, increasing ; midnight hard squalls with high sea from N. N. E. Barometer falling, double-reefed the topsails, high confused sea running from N. W., N. W. and N. E. very heavy rain.—8 p. m. Bar. 29.836. Ther. 82.—10 ditto, Bar. 29.766. Ther. 81—Midnight, Bar. 29.586. Ther. 80.

Sunday, 2nd October.—Gale increasing, very heavy rain and hard squalls, sea very high and confused, wind veering suddenly from S. W. to N. W. and back again ; 6-30, a very vivid flash of lightning and sudden awful crash of thunder burst immediately over the mast heads making the ship tremble ; very hard squalls 7-30. At 7 a. m. Bar. 29.436. Ther. 81.—9 ditto, Bar. 30, 29.406, Ther. 82.—Noon, Bar. 29.406. Ther. 84.—2 p. m. Bar. 29.436, Ther. 83.

Rain falling in torrents; 9-30, furl'd the fore top sail and hove the ship to, with head to N. N. Westward, wind then settled at West. Noon no rise in the mercury, secured every thing, and made snug for bad weather. Latitude account $17^{\circ} 10' N.$, longitude $85^{\circ} 30' E.$; p. m. squalls very heavy, but clouds more broken. It had previously been very thick and very oppressive, wind W. N. W. At 2, the mercury which had been stationary since 10 a. m. began to rise. At 5 p. m. moderating, squalls less severe, and not continually raining as it had previously done; made a little sail and bore up to the E. N. Eastward, wind settled at W. S. W. clearing up. Night fine and starlight, with passing light squalls, made all sail, sea going down fast.—8 p. m. Bar. 29.836, midnight 29.336.

Monday.—Fine weather; Noon latitude $19^{\circ} 10' N.$, longitude $89^{\circ} 25'.$ —Barometer 29.886.

*Extract from the Log of the French Ship Lion, Captain E. BONNET.
Reduced to civil time.*

The *Lion* left Karikal on the evening of the 30th September, passed in sight of Pondicherry, and at noon 1st October was in lat. $13^{\circ} 0' N.$, long. $19^{\circ} 21' E.$ of Paris, ($80^{\circ} 41' Greenwich.$) p. m. and to midnight cloudy, an 8 knot breeze from W. N. W.

2nd October.—Weather and sea increasing, steering 9 knots per hour to N. E. with winds from S. W. to W. S. W. Noon latitude $15^{\circ} 9' N.$, longitude $83^{\circ} 01'.$ p. m. ($85^{\circ} 21' Greenwich.$) p. m. bad appearances, shortened sail at midnight; going 7 knots to N. E., wind S. W., less sea and wind.

3rd October.—Wind to noon S. S. W. At noon fine weather, very heavy sea, latitude $17^{\circ} 20\frac{1}{2}'$, longitude E., Paris $85^{\circ} 21'$ ($87^{\circ} 41' Greenwich.$). From noon 2nd, a current of 90' to the Eastward.* p. m. fine weather to midnight; out reefs.

4th October.—A. m. squally but fine, a good deal of sea. At $\frac{1}{2}$ past 9, saw a ship which we passed at 10; she had lost her foremast, but made no signals; stood on. Noon latitude $20^{\circ} 23' N.$, sounding 80 fathoms, mud.

* This is worth remarking, as probably the effect of the storm wave.

Dr. CUMBERLAND, the Civil Surgeon of Pooree, has kindly obliged me with the following very clear account of this Storm, as experienced at that station:—

We have lately had a very severe gale at Pooree, the particulars of which I subjoin. The gale commenced on the night of the 1st instant, blowing hard from North, with rain. It continued to increase during the 2nd, occasionally blowing in very heavy gusts, with rain from North. At 6 p. m. the wind which had blown from due N. shifted to E. N. E. when there was an abatement in the violence of the storm. At 6½ p. m. it re-commenced with renewed violence, accompanied with thunder and lightning. At 8 p. m. blowing very heavily from S. E. At 9 p. m. more moderate, heavy rain. At 10 p. m. furious gusts from S. S. E. At 11½ p. m. more moderate. At 12½, heavy gusts from South, thunder and lightning, then again more moderate. At 1½ a. m. of the 3rd, violent gusts from S. after which the gale abated, leaving a brisk gale from South, and towards evening S. S. W., gradually diminishing. The 4th was fine with fresh S. W. breezes. The height of the thermometer on the 2nd was 78°, lowest 76°. Quantity of rain from 8 a. m. of the 2nd to 8 a. m. of the 3rd, 5 inches and ten-tenths. The damage occasioned by this gale both at sea and in shore is immense; no less than six coasting vessels were wrecked within a few miles of Pooree, and the "*Imaum Shah*," 700 tons burthen, foundered off the coast, only four hands saved out of 100 on board. The Nacoda told me that he was at anchor somewhere about the Sandheads when the gale commenced from the Westward; however there is no reliance to be placed on that. The poor man lost his wife and family, and I dare say was somewhat bewildered. The town of Pooree presents a sad scene of devastation, and a great many people have been killed. To give you an idea of the violence of the storm I may mention, that it was about one-eighth more violent than that of April 1840, an account of which both the late Mr. Ewart and myself forwarded to you.* I have had letters from Cuttack to-day, dated the 4th. There I am informed on the 2nd, they had a smart storm, only a few trees blown down, but no material injury done. Cuttack is 50 miles north of Pooree, so that it appears to have confined its ravages more to the coast.

R. B. CUMBERLAND,

Pooree, 5th October, 1842.

Civil Assistant Surgeon.

* See Jour. As. Soc. Vol. ix, p. 1021. Third Memoir on Law of Storms in India.

DR. MINTO, *Civil Assistant Surgeon at Cuttack, obligingly sends me the following account of the gale as experienced there:—*

Being unable to take particular notes of the weather during the last few days I applied to a friend to favor me with his, and as they may be useful to you, I transmit a copy.

1st October.—First part heavy rain ; noon N. N. E. and N. E. *strong* breeze ; 8 P. M. increasing breeze North, fresh gale and heavy squalls of rain.

2nd.—First part North, fresh gale and heavy squalls from North, N. N. E. and N. E. noon increasing gale, North and N. N. E. ; 4 P. M. strong gale North, furious squalls from N. and N. E. ; midnight a *rasp-*ing gale N. and N. N. E. ; heavy rain.

3 A. M. a lull ; 6 A. M. a strong breeze from E. S. E. and S. E. ; increasing breeze and cloudy ; latter part moderate breeze and cloudy.

I should say the strength of the gale, which came with heavy squalls of rain, was from noon until sun-set of the 2nd. From the evening of the 1st until day-light of the 3rd, three inches of rain fell. There has little injury been done to property, considering the severity of the weather, I mean in the immediate neighbourhood of Cuttack.

A. MINTO,
Assistant Civil Surgeon.

Englishman, 25th October, 1842.

ARRIVAL.

25th October.—Ship *Juddah Rohoman*, Nacoda, from Muscat 30th August.

REMARKS.

The *Juddah Rohoman* driven out from the Sandheads on the 30th September in a severe gale of wind from the Eastward, lost fore and main-masts by the board, and was obliged to throw a quantity of cargo overboard, to lighten the ship. On the 2nd of October in company with a large ship of 600 tons with nothing left but her bowsprit, she made various signals, but we could not understand them, in one hour afterwards no trace of her could be seen, supposed her to have foundered, it blowing hard at the time and a tremendous sea running ; this took place in latitude 19° 11' N., longitude 87° 58' E.

The Ship Eliza was outward bound, and put to sea from the Sand-heads at the commencement of the storm. Captain McCarthy has obligingly communicated the following graphic account of it to me through Messrs. Cockerell and Co., of which I have only abridged those manœuvres and preparations which every seaman understands to be matter of course, which would not be intelligible to other readers, and which do not serve to throw any light upon our subject.

Report of Capt. McCARTHY, Ship Eliza, civil time.

30th September, 1842.—Civil time A. M. Light breeze from the southward and fine weather; at 3 A. M. hove up and made all sail down from Saugor Point, set all studding sails; at noon light winds from N. N. E. to N. N. W. and fine weather. Barometer 29.80. Thermometer 84.0. Steering down Channel, a very heavy rolling hollow swell and all possible sail set. The heavy head swell continued all the way down Channel. At 2 hours 50 minutes, Mr. Hand, Pilot, left the ship about two miles above the outer Floating Light, and went up in the steamer. Increasing breezes and cloudy, *a strong Westerly set,** steering S. S. E. $\frac{1}{2}$ E.; at 7 P. M. the Light Vessel North, wind from N. N. E. to N. N. W., a heavy dark appearance from the S. E.; from sunset to 9 P. M. light winds from Northward with much, very vivid, lightning to the S. E., threatening appearance and incessant lightning; at 11 Barometer 29.78. Smart squall from S. E. with very heavy rain. The Barometer stationary as well as the Sympiesometer, heavy rain continued. At midnight fell calm, with baffling airs from Northward and Southward alternately.

1st October.—An increasing breeze from N. N. E., steering S. S. E. $\frac{1}{2}$ E. about five knots; a turbulent cross sea on, but not high. 4 A. M. strong N. N. E. winds with squalls and incessant rain with a cross sea as above; at 6 to 7 A. M. hard squalls and drizzling rain, ship pitching heavily; at 8 A. M. squalls increased, attended with constant rain and windy appearance, reduced sail. Barometer 29.78, not fallen any since

* These italics are mine, as this phenomenon is one to which too much attention cannot be paid.—H. P.

yesterday, and Sympiesometer 29.70. It continued steady from 8 A. M. to noon; strong N. N. E. winds with squalls and much rain, a cross turbulent sea at noon. Barometer fell suddenly to 29.68.; at 3 P. M. strong breeze from N. N. E. and rain and thick weather, wind falling light at times and freshening as suddenly again.* Made all preparations for bad weather, and brought the ship to the wind under double reefed main topsail and foretopmast staysail; at sunset strong wind approaching to a fresh gale, with unsettled thick weather, wind lulling and freshening at times from North to N. E. with a cross, turbulent, agitated sea and constant rain. Barometer falling a little; from 6 P. M. to midnight fresh gales and hard looking weather, no rain; midnight Barometer 29.50 falling. Sympiesometer 29.42. Close reefed the main topsail and in forestaysail, hove to under main topsail close reefed, head E. S. E. .

2nd October.—A. M. commences with strong gales, with squalls and light rain again; sea high and cross, ship easy, and not moving much, shipping no water on deck, lurching at times. Barometer fallen at 1 to 29.30. Sympiesometer 29.22. and falling; blowing a hard gale, pitching hard, and taking water on deck, increasing gale. Barometer falling fast; at 3-30 increased to a violent gale, steady at about N. N. E. with a high sea from the Southward, making it very cross, shipping a good deal of water on deck when the ship lunched. Barometer fell very suddenly since midnight from 29.30 to 28.30, and Sympiesometer 28.22, and falling still. Clued up the close reefed maintopsail, and although it was run up quick, before the men could get it well fast, it blew nearly to pieces; the wind increased suddenly to a violent storm, the drift making a clean sweep over us for several feet above the deck, the weather quarter-boat blew up to the rigging, got a rope round her to the rail. Just about 5-30 A. M. blowing a violent hurricane from about N. N. E., ship laying over three planks of her lee deck in the water; wind most terrific, the weather quarter-boat broke the davits, blew up about ten feet up the mizen rigging, and lay across and broke the planks in several places. Stove all the full water casks that were on deck and hove them overboard to ease the ship, now laboring very heavy and burying very much to leeward; masts bending and buckling with the force of

* This is exactly the rising and falling of the wind described in the Seventh Memoir, vol. xi, p. 1000.

the wind, ship buried to leeward as high as the rail. At 6 A. M. the fore-topgallant mast broke off above the cap, and likewise the main and mizen; put an extra batten on the after-hatch with long nails, the fore upper hatchway caulked down, the ship now laying over with her lee side all buried within two planks of the hatchway; the upper part of lee bulwark swept away and upper covering board split, the gun and carriage washed over the rail, the spars on the booms and longboat all fast; but the board on the booms adrift the wind having got under the boat, broke her lashing and blew her to pieces. Barometer still falling since 6 A. M.; at present 8 A. M. Barometer 27.92 and Sympiesometer 27.78. Blowing a terrific hurricane; ship much over, the lee side of the quarter deck quite buried, and the covering rail being apparently split, did not know the extent of the damage to leeward, it being under water; masts struggling and bending much, the foremast head gave way and fore-topmast fell over the side with yards, and our foreyard came down the foremast several feet; ship not rising at all, and wishing to wear her to get the lee side up, (hurricane still as violent,) cut away the main topmast backstays to ease the ship and try to righten her, as the fore topmast going did not appear to do so, and to save the mainmast, when the main topmast broke some feet above the cap, yards, &c. going with it over the side; still the ship lay over with most of the lee side of the deck under water, and not rising cut away the mizen shrouds to ease the ship, when the mizen mast went over the side, taking away the binnacles, compasses, boats, &c. &c. overboard, and carrying away the starboard quarter gallery, poop rail, and smashing the skylight and every thing on the poop. The ship rightened a little, broke the steering wheel and wounded a man on the poop; the sea washed into the starboard after cabin, (the Captain's,) and nearly filled it, and from it to the cuddy and other cabins, and a large quantity of water got down the companion hatch abaft the cuddy before it could be secured. Since 6h. 30m. A. M. until at present at 11 A. M., it had blown a terrific hurricane. Barometer stationary at 27.89, Sympiesometer 27.78; still blowing as furiously as ever. About a little after 11 A. M. the wind suddenly lulled very much, got the hands on the poop, got tackles on the tiller, the wheel being broken, and put it up; after some time the ship wore and cleared the deck of water, the sea knocked her about the stern in wearing,

brought her to on the starboard tack ; much lightning and dark overcast weather ; heading up N. W. At a little before noon, the wind shifted in a flash of lightning suddenly to the S. S. E. from N. N. E. and blew instantly nearly as violent as it had before done, from N. N. E. Clapped the hands on the pumps, and kept at them sometime ; but they were washed away, some rice coming with the water ; ship apparently a list to starboard ; dark overcast weather, the drift washing right over the ship ten feet above the deck ; not able to look to windward. Cut away the wreck of the mizen mast, it being now to windward, but not before it had struck the rudder and shook it very much ; it struck likewise under the counter before the ship was wore round, and shook the stern frame a good deal ; threw every thing overboard that was about the decks as well as three provision casks that had washed out from under the top gallant forecask where they were stowed, to prevent them from wounding the people ; many having had their legs cut and other bruises. Two feet and eight inches in the well, but could not tell precisely, every thing being so wet ; set to work at the pumps, a quantity of rice coming up with the water ; pumps working well and heaving a large quantity of water ; blowing very violently from S. S. E, *the lee sea coming nearly up to the pumps at times ;** secured the foreyard and lashed the yardarm of the mainyard down to the ring bolts in the stanchion and kept it on end, to keep it steady ; tried to get something on outside the quarter gallery, as the cabins were nearly full of water, but could not succeed ; the men were washed away ; blew a violent hurricane until about 4h. 30m. P. M. black overcast weather and lightning ; when the extreme violence of the hurricane moderated a little ; all hands at the pumps, continued at them until nearly 6 P. M. when the ship sucked. A large quantity of water in the cuddy and cabins, and some of it getting below as it washed about ; succeeded in getting the quarter gallery door barricaded with canvass and battens, which kept part of the sea out. At 6 P. M. moderating to a hard gale, and glass rising slowly from 27.92 to 28.30. Sympiesometer 28.22, both rising together. Sympiesometer moved up first. Succeeded in stopping the water from getting in, got

* The italics are mine, this is partly a confirmation of my remarks on the danger of the lee sea in the First Memoir, vol. viii. Jour. As. Soc. p. 645.—H. P.

the water baled out of the cabin and cuddy, got some more of the wreck cut away, tiller loosened a little on the rudder head, got quite pitch dark, sent the men to rest in the cuddy. Barometer 28.50. Ship laying to, helm down, head E. N. E. to N. E., wind about S. S. E., cross turbulent agitated sea on, less water on deck, and violence of the storm moderating. From 9 to midnight strong gale and overcast weather, steady at S. S. E. Midnight ditto weather, ship rolling heavy at times, the Sympiesometer rose to 28.96, the Barometer got broke by striking against the side in one of the heavy rolls after the violence of the storm had subsided.

3rd October.—A. M. strong gale from S. S. E. and dark weather, but clearing away a little; ship laying to, head to Eastward, very easy and decks clear of water, great heat coming up from below. Sunrise hard gale and fair weather with passing clouds, wind S. S. E., ship laying to under bare poles, but not to the wind; clearing the wreck. Noon strong winds and fair weather. Sympiesometer 29.40. Thermometer 82°. Latitude observation 19° 46', longitude chronometer 88°. Situation by account at midnight of the 1st, when the violence of the gale commenced and lasted to 4 A. M. on the 2nd October, was latitude 18° 30' North (about) and longitude 89° 0' East. P. M. strong winds from the Southward, and cloudy weather. At 2, Sympiesometer 29.56. Thermometer 84°. Squalls at intervals and light rain, high sea on from S. E. Employed clearing wreck and getting the foreyard up, set the lee part of the mainsail, a few cloths to leeward, the rest being all blown away, to keep the ship to; the foresail nearly torn to pieces, very high sea on. Midnight strong southerly winds, passing squalls at times. Midnight ditto. Finding ourselves at so little distance from the Sandheads, and a strong southerly wind blowing and likely to continue, and not being able *yet* to keep the ship to the wind, it being S. S. E. and quite dead foul, we determined to run back, kept away N. E. by N. under clew of mainsail, going about two knots.

4th October.—A. M. strong breeze from S. S. E. to South, with passing light squalls, kept the ship N. E. by N. $\frac{1}{4}$ N. to check the westerly set that always prevails outside at this time. Noon, sea subsiding gradually, moderate breeze and fair weather. Latitude by observation 20° 12' North, longitude per chronometer 87° 58'; had a strong set about W. S. W., and shortly arrived safe at Calcutta.

Report of the Ship Emerald Isle, Capt. J. SCALES. From the Marine Board.

On the 1st instant whilst at anchor in the Eastern Channel, the weather became unsettled with the wind at East, the squalls rising about S. E., but striking us mostly from about East. About 4 p. m. gale and sea increasing, slipped and made sail to the southward. During the night it blew fresh with an increasing sea. About 5 a. m. on the 2nd, wind about E. S. E., gale increasing with such rapidity, that I was unable to shorten sail sufficiently quick, the weather beginning to assume a most wild and threatening appearance. About 1 p. m. the wind and sea had increased to that extent, and the ship so uneasy, I thought we should have been swallowed. Thermometer was then 82° and Sympiesometer $28\frac{5}{12}^*$, varying not more than a couple of tenths, until about 6 p. m., when it gradually rose, and the breeze had sensibly abated. The wind had then veered to South, but the hardest part was from the S. East; it blew hard in squalls during the night with deluges of rain, but by daylight had almost subsided. The Sympiesometer then 28.40, which at Noon rose to 28.50. Thermometer 84° , the wind then gradually drew round to the S. S. W., when the weather became clear and tranquil.

J. SCALES,

Commanding Ship Emerald Isle.

Abridged Log of H. C. Steamer Tenasserim from Singapore, bound to Calcutta, reduced to civil time.

28th September, 1842.—Noon, latitude $14^{\circ} 22'$ N. longitude $93^{\circ} 45'$ E. Narcondam at 1h. 30m. A. M. W. by N. (distance not stated). Fine westerly breeze. P. M. to midnight, winds variable, N. N. W. to W. 4 p. m. Preparis E. by N. $\frac{1}{2}$ N. (no distance).

29th September.—Fresh breezes N. W. by W. to W. N. W. No observations at noon. P. M. the same weather, Lat. account $16^{\circ} 6'$ N., longitude $92^{\circ} 15'$ E. 10 A. M. wind North. P. M. heavy squalls occasionally from N. W. Midnight wind N. W.

30th September.—A. M. strong breeze and thick cloudy weather, with a heavy cross sea, set storm stay sails. No observations. Latitude

* Captain S.'s Barometer was broken.

account $17^{\circ} 24' N.$, longitude $91^{\circ} 28' E.$ lying to. From 2 P. M. "wind shifted* to a gale from S. S. W." Hove to under storm staysails. 5h. 30 strong gale, ship labouring much and so till midnight.

1st October.—A. M. wind lulling at intervals, wind (apparently) S. S. W. till 6 A. M. when wind marked S. S. E. "At $9\frac{1}{2}$ bore away N. W. by N. with a heavy swell." Noon, latitude observation $18^{\circ} 2' N.$, longitude account $90^{\circ} 15' E.$ P. M. wind S. E. fresh breezes and rain to midnight, when by account it would appear, that she was about in latitude $19^{\circ} 33\frac{1}{2}'$, longitude $89^{\circ} 28' E.$

2nd October.—A. M. heavy squalls and rain S. E. 6-30 "fresh gale and dark rainy weather with a heavy southerly sea." 7 P. M. hove to under storm sails. At 10.15 in 70 fathoms water. Noon latitude observation $20^{\circ} 47' N.$, longitude $88^{\circ} 10' E.$ P. M. wind S. E., in 55 fathoms. Brisk gale to midnight, when fine.

3rd October.—A. M. wind S. E. 4 P. M. in 35 fathoms, and at 5 A. M. 80 fathoms, no ground (being on the Swatch). Noon, latitude $20^{\circ} 56' N.$ and squally. At 0.30 P. M. saw the Pilot.

Extract from the Log of the ship Halifax Packet, from Calcutta, bound to England. Forwarded by the Master Attendant, Point de Galle.

30th September, 1842.—At midnight the Pilot left us at the Sand-heads, all possible sail set, wind N. N. E. steering S. S. E. Latitude at noon $21^{\circ} 18' N.$, longitude $88^{\circ} 40' E.$ Bar. 29.60. Ther. 82° .

1st October.—During the afternoon of this day the wind increased, double reefed the topsails, the wind veering from N. N. E. to East. Barometer and Thermometer same as yesterday.

2nd October.—At 2 A. M. civil time, the Barometer had fallen to 27.90, made all snug, the slings of the foreyard gave way, got the yard and sail secured across the forecastle, it then blowing a terrific hurricane. At 4 A. M. the bowsprit gave way, carrying away the foremast near the deck, the starboard bower anchor stock, starboard gangway rail, bulwarks, split the covering board, and stove the long

* Wind not marked, but apparently from W. N. W. when the shift took place.

boat. At $4\frac{1}{2}$ the main topmast went over the side, carrying with it the main cap and part of the mast head; cut away as much of the wreck as possible to save the rudder and ship. The crew, although strong and numerous, very inefficient. At 5, the typhoon at the highest possible state of fury, the mizen mast went over the starboard quarter, carrying with it the boom, gaff, binnacles, compasses, broke the steering wheel, and started the upper rudder brace, also a sky-light hatch, signal chest, stancheons and every thing on the poop; the ship completely under water, yet leaking but little. About noon the wind veered to South, and became more moderate. The Barometer getting rapidly up, but a high sea; the ship rolling fearfully. Barometer at noon 28.90, at 8 P. M. 29.00'. Lat. $19^{\circ} 26' N.$, long. $88^{\circ} 30' E.$

3rd October.—On the morning of this day cleared away the wreck, saw two ships*dismasted and stern frame of a third, with the name in white letters, but could not read them, the sea high and the crew as much disabled as the ship; every thing full of water. Books, charts, clothes, nautical instruments and one chronometer all spoiled; wind S. S. W. Barometer at 4 A. M. 29.40, at noon 29.50.

4th October.—This day the ship rolling dreadfully, quite under water; nothing could be done but keeping her pumped out; found a great quantity of our bread in a damaged state, wind moderated from South. Barometer 29.70. Latitude $19^{\circ} 46' N.$, longitude $87^{\circ} 50' E.$

From MR. BOND, Master Attendant at Balasore, I have been favored as usual with the following able Statements of the Winds and Weather.

I have the pleasure to forward an account of the breeze here on the 1st to the 7th October 1842, up to which time the wind was variable, with cloudy weather and rain. The Barometer only fell to 29.52, thereby indicating rain more than wind, which indeed proved correct; the sea rose above high water mark, occasioned by the wind to the Southward, and three Salt Vessels were driven ashore and two Telingahs, also three Maldiva boats foundered below Chooramoon; the people of two of them having been saved in their boats, the other people were supposed to have gone ashore near Hidgelee. No other

vessels were lost north of Point Palmyras; but to the southward of the Point numbers were driven ashore and foundered, and many lives lost. A range of hills (the Neelgherries,) stretches down from the northward in a line with Chooramoon, which place lies S. S. W. of Balasore, distant twenty miles. On the N. E. side of this range of hills the winds were weak, (a top gallant breeze only,) whilst it increased on the S. W. side of Chooramoon, and onwards to Pooree and the Chilkah Lake, to a complete hurricane, for the coast was strewed with wrecks, besides several ships being completely dismantled, and some having foundered.

Oct. 1842.	Ther. 2 P. M.	Bar. 9 A. M.	Bar. 3 P. M.	Bar. 5 P. M.	Remarks.
1st October,	83	29.80	29.71	29.67	N. W. to N. E. rain.
2nd ditto, ..	80	29.71	29.55	29.50	{ Top gallant breeze N.E., squally rain.
3rd ditto, ..	82	29.62	29.65	29.64	
4th ditto, ..	83	29.74	29.70	29.70	S. E. ditto ditto.
5th ditto, ..	84	29.68	29.70	29.69	S. E. ditto rain.
6th ditto, ..	85	29.80	29.68	29.65	S. E. to S. W. rain slight.
7th ditto, ..	85	29.80	29.80	29.77	{ S.W. fairer and variable N. W. and N. E.

The logs of the Pilot and Light Vessels will be found included in the Tabular statement. The following is the only document which I have of the state of the weather at Calcutta, which is followed by such reports from inland stations as have reached me.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the Month of October, 1842.

Days of the Month.	Moon's Changes.	MINIMUM TEMPERATURE, OBSERVED AT SUN RISE.				MINIMUM PRESSURE, OBSERVED AT 9 H. 50 M.							
		Temperature.		Wind.	Aspect of the Sky.	Temperature.		Wind.	Aspect of the Sky.				
		Barometer.	Of the Mercury.			Of the Air.	Of an Evaporating Surface.			Barometer.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.
Oct. 1		Inches. 29.650	80.5	78.0	76.0	S. W.	Rain Thundering,	Inches 29.681	83.9	86.5	82.0	N. E.	Cirro-strati.
" 2		.620	79.0	76.2	76.0	N. E. (high)	{ Drizzly, Thunder and fresh Gale.	.650	79.8	78.0	76.0	(high) N. E.	Raining.
" 3		.613	80.2	79.5	77.4	S. E.	Cirro-strati.	.674	84.1	87.0	82.0	S. E.	Cumuli.
" 4	●	.665	81.0	79.7	78.0	E.	Generally Clear.	.722	84.6	86.6	82.1	S.	Scattered Clouds.
" 5		.661	81.0	79.9	78.0	Calm,	Cumulo-strati.	.690	84.0	85.0	81.0	S.	Cumulo-strati.
" 6		.610	81.8	80.0	78.0	S. E.	Cloudy, Thundering	.638	82.0	83.0	79.8	S. E.	{ Cloudy, Distant Thundering.
" 7		.626	79.6	78.0	75.0	Calm,	Cloudy.	.713	83.4*	85.0	79.0	N. W.	Cirro-strati.
" 8		.670	80.5	79.7	77.8	S. W.	Clear.	.700	83.8	87.5	80.8	W.	Clear.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the Month of October, 1842.

Days of the Month.	Moon's Changes.	OBSERVATIONS MADE AT APPARENT NOON.							MAXIMUM TEMPERATURE, OBSERVED AT 2 H. 40 M.						
		Temperature.				Wind.	Aspect of the Sky.	Temperature.				Wind.	Aspect of the Sky.		
		Barometer.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.			Direction.	Barometer.	Of the Mercury.	Of the Air.			Of an Evaporating Surface.	Thermometer exposed to the Sun's rays.	Direction.
Oct. 1		Inches 29.669	° / 87.4	° / 88.5	° / 84.0	E.	Cirro Cumuli.	Inches 29.618	° / 87.0	° / 90.0	° / 83.0	° / 104.0	E. ...	Cirro Cumuli.	
" 2		.622	80.0	77.5	76.0	(high) N. E. Raining, and fresh		.597	80.5	80.0	78.0	82.5	(high) E Nimbi.		
" 3		.665	84.9	86.0	82.0	S. E.	Nimbi. [gale.	.635	85.9	88.5	83.0	107.0	S.	Cloudy.	
" 4		.721	86.0	87.2	82.0	S.	Cumulo-strati.	.665	86.1	87.2	82.0	93.0	S.	Cloudy partially.	
" 5		.669	85.8	88.0	83.3	S. E.	Cumulo-strati.	.613	86.8	89.0	82.3	109.0	S.	Cumulo-strati.	
" 6		.610	82.0	82.2	79.7	S.	Nimbi.	.581	83.9	85.3	81.9	100.0	S.	Cumuli.	
" 7		.693	85.0	87.7	80.1	W. S. W. ..	Cumuli.	.670	85.2	88.9	80.9	112.0	S. W. ...	Cumuli.	
" 8		.686	86.0	90.0	82.7	W.	Clear.	.650	86.2	90.0	82.6	111.0	W.	Cumuli.	

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the Month of October, 1842.

MINIMUM PRESSURE, OBSERVED AT 4 P. M.					OBSERVATIONS, MADE AT SUNSET.					Rain Gauges.	
Days of the Month.	Moon's Changes.	Temperature.			Wind.			Aspect of the Sky.			Moon's Horizontal Parallax at Noon.
		Barometer.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.	Direction.	Temperature.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.	
Oct. 1.		Inches 29.600	87.4	88.7	83.2	E.	80.2	85.7	80.2	S. E.	61
" 2		.589	81.0	79.1	77.0	(high) E. Nimbi.	76.5	78.0	76.5	(high) E. Nimbi.	61
" 3		.634	84.7	86.0	81.0	S.	80.2	84.0	80.2	S. E.	61
" 4		.653	86.0	88.0	82.5	S.	81.0	86.0	81.0	S.	61
" 5		.605	86.0	88.0	83.0	S.	80.2	84.5	80.2	S.	60
" 6		.577	84.1	85.2	81.8	S.	80.2	83.0	80.2	S.	59
" 7		.665	85.2	88.5	81.7	W. S. W. Cumuli.	80.3	84.5	80.3	Calm.	59
" 8		.646	85.7	89.0	81.4	W.	80.4	84.9	80.4	Calm.	58
		Barometer.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.	Direction.	Temperature.	Aspect of the Sky.	Upper.	Lower.	
		Inches 29.608	86.0	85.7	80.2	S. E.	80.2	Very Cloudy.	1.34	1.37	
		.582	80.0	78.0	76.5	(high) E. Nimbi.	76.5	Nimbi.	0.54	0.59	
		.642	83.5	84.0	80.2	S. E.	80.2	Nimbi.	0.05	0.08	
		.660	85.2	86.0	81.0	S.	81.0	Cirro-strati.	..	..
		.610	84.7	84.5	80.2	S.	80.2	Cloudy.	0.22	0.27	
		.589	83.2	83.0	80.2	S.	80.2	Generally Clear.	0.25	0.31	
		.670	84.5	85.5	80.3	Calm.	80.3	Generally Clear.	..	..
		.650	84.8	84.9	80.4	Calm.	80.4	Cirro-strati.	..	..

The Observations after Sunset are made at the Hon'ble Company's Dispensary.

		OBSERVATIONS MADE AT 10 P. M.									
		OBSERVATIONS MADE AT 8 P. M.									
		Temperature.					Temperature.				
Days of the Month.	Moon's Changes.	Barometer.			Of the Mercury.		Of the Air.		Of an Evaporating Surface.		Of an Evaporating Surface.
		Inches.	°	'	°	'	°	'	°	'	
Oct. 1		29.825	84.75	85.25	84.25	84.25	85.25	84.36	85.25	84.25	
" 2		.775	82.0	81.5	80.5	80.5	81.0	81.75	81.0	80.0	
" 3		.686	83.25	84.0	83.75	83.75	83.1	83.0	83.1	81.0	
" 4		.900	85.0	84.0	83.75	83.75	83.25	84.25	83.25	82.2	
" 5		.796	85.0	84.25	84.0	84.0	84.0	84.25	84.0	83.25	
" 6		.750	83.0	83.5	81.5	81.5	83.5	8.35	83.2	81.0	
" 7		.900	84.25	84.0	83.5	83.5	84.0	84.0	84.0	83.5	
" 8		.850	85.5	85.0	84.75	84.75	85.5	85.5	84.75	84.5	

The following Memorandum is from my friend WM. PEACOCK, Esq., who was, at the time of which he writes, on the river in a Boat.

Being about 10 or 12 miles above the mouth of the Bhagruttee (about latitude $32^{\circ} 32' N.$ longitude) $88^{\circ} 20'$ on the 5th October, I observed in the evening the wind was from the Eastward, gradually lulling as night came on. After sunset a very heavy bank of clouds visible all along the horizon, commencing a little East of North and running round Eastward to nearly South. During the night of the 5th, the wind sprung up again, but from the North East; and it was blowing fresh from that quarter all the forenoon of the 6th till about 12 or 1 o'clock, when heavy squalls came up from the South-East, succeeding each other at intervals of half an hour, and so on till between 3 and 4 p. m. when the weather cleared a little; but it still blew fresh from South East, with an occasional shower till evening. I was by that time in a very sheltered situation, and could not well feel the weather as I did in the morning of the 6th, and during the middle of the day, all which time I was knocking about in the open river, and exposed to the full power of the storm.

WM. PEACOCK.

The following note from Purulia, by Capt. HANNYNGTON, B. N. I. is the only trace I have of any storm in the line between Cuttack and Gya.

Purulia, 11th April, 1843.

The fact is, that we had a brisk gale here for one day during the first week of October, and pretty full memoranda of the Barometrical changes were noted down by a friend who was then here, and who instead of at once writing them in the memorandum book, committed them to a scrap of paper, which has unfortunately been mislaid. I have searched for it long and in vain. So far as my memory serves, the gale began here on the night of Sunday the 2nd October, and blew from North veering to West, in which quarter it moderated, and ceased in the afternoon of the 3rd. Seeing it was so short, and no notice being taken of it by you, I supposed that it was of no consequence, and therefore did not send a report. You will say that nothing of the

kind can want some degree of consequence, and that the memorandum should have been sent. Very true; I will behave better next time. I have much occupation, and do not keep a daily register.

Lieutenant SHERWILL, B. N. I. employed on the Revenue Survey, has kindly sent me the following Note from Gya.

We had a violent storm at this place (Gya) on the 5th October. It commenced early in the morning (sun-rise) of the 5th from the S. E. and blew with a half-gale-like strength till night-fall, when its strength increased, and it blew furiously till the morning. About 8 A. M. on the 6th, it veered round to the S. W. and blew till 12 noon, when it faded away, having lasted 30 hours, and doing some damage by blowing down trees, &c.

The storm from its commencement till close, was accompanied (with the exception of short intervals) by heavy rain; heavier than had occurred during any part or time of the rains.

No lightning or thunder during the day visible or audible; but during the night, continued peals of thunder followed in quick succession.

The whole country was flooded from the rain, tanks filled to overflowing, and in fact, the storm has proved a blessing to this part of the world.

W. S. SHERWILL.

From Pussewa, near Jounpore, Lat. 25° 40' N., Long. 83° 2' E., I have from V. TREGAR, Esq. the following account of the Storm.

I send a few notes taken during a severe storm with which we have unfortunately been visited. I hope you will be able to lay down its course by the aid of other reports, which I doubt not will be made to you. Great injury has been done to the cane crop in general, and my indigo has also suffered greatly.

Notes during the Storm of the 5th and 6th October 1842. Pussewa, 12 miles E. of Jounpore.

Date.	Time.	Bar.	Wind.	Remarks.
3rd.	Noon.	29.5	E.	Fresh breeze, with occasional light showers.
	6 P. M.		...	Breeze rising.
4th.	Noon.	29.4	E.	Strong breeze, with frequent showers; clouds in two strata, lower one driving very rapidly to W., upper moving very slowly in the same direction, occasional breaks showing the clear sky.
	P. M.			Heavy rain and breeze increasing.
5th.	5. 30.			High wind and showers.
	A. M.			Ditto ditto.
	Noon.	29.25		
	P. M.			
	3.	29.1		Very high wind, with rain.
	6.			Ditto ditto, and heavy rain.
	Midnight.		N. E.	Strong gale, with rain.
6th.	A. M.			
	3.	29.0	N.	Gale increasing, with violent gusts, which was the character of the storm during the past night; many trees blown down, and innumerable branches torn off.
	7.		N.	Violent storm, with rain.
	10.	29.05	...	Gale continuing, but sky clearing, a few minutes of sunshine. Barometer began to rise.
	Noon.	29.1	76 N. N. W.	Gale decreasing.
	P. M.			
	1.	29.15	N. W.	Ditto.
	2.	29.2	78 N. W. by W.	Ditto, strong breeze only.
	3. 40.	29.25	W. N. W.	Light breeze.
	5.		W.	Ditto, low clouds driving very fast to S. E., heavy bank from N. W. round by N. to S. E.
	6.		W.	Heavy rain from N. W.
	P. M.			
	6. 30.		W.	Clearing up, fresh breeze.
	8.	29.3	78	Cloudy, with very light rain.
	A. M.			
7th	6.	29.4	80 W.	Clear, with pleasant breeze.

E. C. RAVENSHAW, Esq., C. S., *Commissioner of Revenue for the Patna District*, has obliged me with the following Notes from that Station :—

I observe there has been a heavy gale at Cuttack on the 2d instant, which extended far into the interior. As it is probably connected with a violent and continued gale experienced at this station, I enclose the very imperfect notes made by me while it lasted.

Date.	Bar. at 10 $\frac{1}{2}$ a.	Ther.	Rain.	Remarks.
Oct. 2 } & 3 }	Not. marked	0	0	} Blowing fresh from East.
„ 4	29.81	84	.12	
„ 5	29.73	83	—	} Ditto ditto. Ditto, at 6 p. m. rain commenced, continued pouring all night. Gale increasing. Gale continues, trees blown down in all directions, wind shifted to the South ; at 5 p. m. to the West, from which quarter until midnight it blew furiously, but with little rain. Calm. E. C. RAVENSHAW.
„ 6	29.51	81	4.50	
„ 7	29.74	79	.12	

To LIEUT. CHAMIER, of the Ordnance Department, I am obliged for the following account of the Storm at Allahabad.

Possibly the following hasty Memo. of a gale of wind we had here at the beginning of the month may prove useful, as a hint to other information :—

MEMO.

October 1st and 2nd.—Strong Easterly winds and clouds, with occasional showers.

3rd.—Ditto ditto during the day, increased after sun-set, and during the night blew a gale, towards morning (4th) moderated.

4th.—Much the same as yesterday, with occasional heavy gusts and showers. At 8 p. m. increased to a strong gale, wind East and E. N. E.

5th—Eight o'clock A. M. gale from E. and E. N. E. very strong ; 11-30, moderated, heavy showers ; 4 p. m. strong wind from E. ; 7, moderate ; at midnight increased to a strong gale.

6th.—Gale continued from E. and E. N. E. till day-break, when it decreased and commenced clearing up, the wind changing to N. E., N. and finally West, in which quarter it remained nearly steady.

Between the 1st and 6th, 1.74 inches of rain fell.

THERMOMETER.

October 1st,	10 A. M.,	....	....	....	....	86	Fahrenheit.
"	Noon,	....	....	....	....	21	"
"	4 P. M.,	....	....	....	....	93	"
"	2d,	Not observed,					
"	3d,	10 A. M.,	....	....	....	86	"
"	4th,	Not observed.					
"	5th,	10 P. M.,	....	....	....	80	
"	Noon,	....	....	....	....	80	
"	4 A. M.,	....	....	....	....	80	
"	6th,	10 A. M.,	....	....	....	83	
"	Noon,	....	....	....	....	89	
"	4 P. M.,	....	....	....	....	88	

GEO. G. CHAMIER, 1st Lieut.
Com. of Ordnance.

The following report from Agra has been sent me by Dr. Balfour, Surgeon to the Honorable the Governor of the N. W. Provinces.

Sympiesometer and Thermometer for the first 10 days of October 1842, at Agra.

Day of Month.	Ditto of Week.	Thermometer at 10 A. M.	Sympiesometer at 10 A. M.	Wind.	Thermometer at 4 P. M.	Sympiesometer at 4 P. M.	Wind.	Remarks.
1	S.	87½	29.13	N. E.	88½	28.94	N. E.	
2	Sun	88	·16	vble.	88	29.01	N. E.	p. m. cloudy and slight shower.
3	M.	87	·15	E.	85½	·02	Nly.	p. m. fine shower.
4	T.	86	·12	N. E.	86½	28.98	N. Ely	cloudy all day, fine
5	W.	85	·07	N. E.	82½	·98	N. E.	rain in afternoon,
6	T.	83½	·10	Ely.	85½	·96	Cm.	heavy continued
7	F.	82½	·15	W.	84½	29.05	W.	rain from 10½ to 4 P. M., at times cloudy.
8	S.	83	·12	W.	84	·00	N. by E	Shower at 8 P. M.
9	Sun	83½	·11	Cm.	84½	·01	N. E.	
10	M.	...	...	...	...	...	...	Absent from the station.
11	T.	82½	·38	Cm.	84	·28	W.	

MY DEAR SIR,—The above may be interesting, as I see you have had a gale at Cuttack during the time, for which I give you a copy of my Register. Easterly winds, from my experience, are rare here in October, and rain too is unusual; the jump of the Sympiesometer on the 11th has been sustained, it never having fallen below 30 (in the morning) since.

J. BALFOUR.

I now, as in former Memoirs, give a tabular view of the Winds and Weather on different days, including in it the logs of the Pilot and Light Vessels, and shall then proceed to the concluding summary of the grounds on which I have laid down the track of the Storms.

Tabular View of the Storms of 2d and 3d October, 1842.

Date.	Name of Places or Ships.	Winds and Weather.	Lat. N.	Long. E.	Barometer.	Sump.	Ther.	Remarks.
Noon 1st Oct. 1842.	Essex, ..	.. A. M. variable, P. M. to mid- night increasing breeze, cloudy and squally W. S. W. to N. N. E. gale at midnight. ..	16.0	83.50	8, 129.836 .. 10, 29.766 .. Midt. 29.536 ..	..	82 81 80	Confused sea, dense clouds to the Northward.
	Lion, ..	.. W. N. W. Cloudy and 8 knot breeze. ..	13.0	81.41	..	..	..	Steering to the Northward and Eastward.
	At Pooree, ..	.. Gale commenced at night, blowing fresh from North.	..	..	..	..	..	1st to 2d, 3 inches of rain.
	At Cuttack, ..	.. A M. heavy rain. Noon N. .. N. E. and N. E. 8 P. M. increasing to fresh gale from North. ..	..	..	..	..	..	..
	Eliza, ..	.. Increasing from N. N. E. with squalls. P. M. thick weather. Midnight gale commenced. ..	Midnight 18.30	89.0	8 A. M. 29.78 Noon 29.78 .. 3 P. M. 29.65 .. Midnight 29.50	29.70 29.42	..	Standing to sea to the S. S. E. 3 P. M. hove to. .
	Emerald Isle,	.. Squally from East and in- creasing. Midnight blow- ing fresh. ..	..	..	..	..	..	At Anchor Eastern Channel. 4 P. M. shipped and put to sea.
	Halifax Packet,	.. P. M. wind increasing N. N. E. to East. ..	..	..	..	..	..	..
	H. C. F. L. V. Hope,	To Noon increasing N. E. .. breeze & squalls, with rain, thunder and lightning. 4 P. M. blowing hard from East- ward. Sunset moderate gale East. 8 P. M. heavier, East. Midnight the same, E. N. E.	..	..	H. C. Pilot and Light Vessels. .. 8 A. M. 29.65 .. Noon 29.61 .. 3 P. M. 29.52 ..	..	82 81 82	30th September midnight stormy, Easterly breezes and threaten- ing weather. Bar 29.63. Ther. 84.

Date.	Name of Places or Ships.	Winds and Weather.	Lat. N.	Long. E.	Barometer.	Snmp.	Ther.	Remarks.
1st Oct. 1842.	H. C. L. V. Beacon.	Stormy, Northerly breezes & cloudy, veering at 4 P. M. to E. and E. S. E. with hard squalls and heavy rain. 8 A. M. N. E. Noon E. N. E. to E. S. E. 4 P. M. E. S. E. to S. E. 8 P. M. S. E. to N. E. blowing hard. Midnight heavy gale at N. E.	21.04	89-27	.. ..	.. ..	.. ..	Very threatening weather and strong. <i>Westerly</i> set. 180 fms. Cable out.
	H. C. P. V. Saugor,	1-30 heavy squall from E. by S. to daylight. At noon, half a gale E. to E. S. E., rain and heavy sea. ..	Lower Floating Light N. N. E. $\frac{3}{4}$ E. $3\frac{3}{4}$ miles.					
	H. C. P. V. Megna,	Wind from E. N. E. to East, latterly stormy, Easterly breezes and heavy squalls. ..	In 9 fms. F. L. E. by N. P. M. 14 fms. S. Channel.		.. ..	.. ..	.. ..	Heavy sea making.
	H. C. P. V. Krishna,	Light breezes N. N. E. to N. E. Middle E. N. E. to East. P. M. E. to E. by S. squally, with rain & threatening. ..	11 fms. Lower Light N. N. W.		29.59	.. ..	.. ..	Latterly threatening.
	H. C. P. V. Cavery,	A. M. E. S. E. fine. Noon E. N. E. to East, squally, lightning, &c.	At anchor 10 fs. F. L. N. E. by E.		.. ..	.. ..	.. ..	3 P. M. every appearance of a gale; made due preparations.
Noon. 2d Oct. 1842.	Essex...	Increasing gale veering S. W. to N. W. 9.30 W. P. M. moderating. Midnight W. S. W.	17.10 85.30		7. 29.436 9.30. 29.406 Noon 29.406 2 P. M. 29.436 4. 29.836 Midn. 29.836	.. .. .. .. .. .. .. .. .. ..	81 82 84 83	
	Lion, ..	Increasing breeze S. W. to W. S. W.	15.9 85.21		.. ..	.. ..	.. ..	Bad appearance, running to the N. E. 7 to 9 knots per hour.

Date.	Name of Places or Ships.	Winds and Weather.	Lat. N.	Long. E.	Barometer.	Simp.	Ther.	Remarks.
2d Oct 1842.	At Pooree, ..	A. M. heavy gale in gusts from due N. 6 P. M. shifted to E. N. E. 8 heavy gale S. E. 10 S. S. E. 12 South.	..	..	..	..	78°	Thunder and lightning after shift of wind.
	At Cuttack, ..	Fresh gale and heavy squalls from North to N. E. Noon increasing N. & N. N. E. 4 P. M. stormy gale North, furious squall N. and N. N. E. Midnight rasping gale N. and N. N. E. ..	..	..	..	..	76	Strength of the gale from Noon to Sunset of this day.
	Eliza, ..	Strong gales and at 3.30 violent gale N. N. E. 5.30 violent hurricane N. N. E. 11 A. M. terrific hurricane. About Noon shifted from N. N. E. to S. S. E. 4.30 moderated a little to hard gale to midnight. ..	..	..	1 A. M. 29.30 3.30 28.30* 8 27.92 11 27.19 6 P. M. 28.30 Broken.	29.22 28.22 27.78 27.78 28.22 28.96	..	Heavy sea from the Southward at 3.30. Lightning with the shift of wind.
	Emerald Isle, ..	5 A. M. E. S. E. gale rapidly increasing. 6 P. M. S. abating.	..	..	..	1 P. M. 28.3	82	Hardest part from S. E.
	Halifax Packet, ..	2 A. M. to Noon hurricane about N. E. ? Noon veered to South. ..	19.26.	88 30.	2 A. M. 27.90 5 A. M. Typhoon. Noon 28.90 8 P. M. 29.00	..	..	..
	H. C. L. V. Hope, ..	A. M. to daylight moderate gale E. N. E. to E. S. E. 8 A. M. to Noon East 4 P. M. S. E. Sunset S. E. by S. 8 P. M. to midnight S. E. gale and squalls, wind and rain throughout. ..	..	..	H. C. Pilot and Light Vessels. 8 A. M. 29.52 Noon 29.42 4 P. M. 29.40 8 P. M. 29.41	..	80 82 80 82	..

* This remarkable fall is specially noted, and confirmed by the Sympiesometer.

Date.	Name of Places or Ships.	Winds and Weather.	Lat. N.	Long E.	Barometer.	Simp.	Ther.	Remarks.
2d Oct. 1842.	H. C. L. V. Beacon,	Heavy gale at E. N. E. to East 8 A. M. East to 4 P. M. Sunset E. S. E. 8 P. M. E. Midst a hurricane at E. S. E.	.. ..	.. ..	.. ..	.. ..	.. ..	Heavy squalls and sea with passing light rain a strong <i>Westerly</i> set, dismal weather throughout.
	H. C. P. V. Saugor,	East to E. S. E., blowing half a gale throughout. ..	Floating Light N. .. E. 5 miles. P. M. E. .. N. 7 miles. ..	.. ..	.. ..	.. ..	.. ..	Tremendous sea rising and frequently breaking over the Vessel, almost sweeping the decks, 150 fms. cable.
	H. C. P. V. Megna,	E. N. E. to E. S. E. Fresh gales with hard squalls & rain. 4.30 increasing middle hard gales, with heavy squalls E. to E. S. E. ..	At anchor 20 fms. ..	.. ..	.. ..	.. ..	.. ..	Daylight driving with 110 fms. and again with two anchors 145 and 125, fms. riding very hard.
	H. C. P. V. Krishna,	Daylight blowing hard E. to E. by S. and E. S. E. .. and threatening. ..	At anchor 11 fms. .. as before. ..	.. ..	.. ..	.. ..	.. ..	Heavy sea throughout, riding with 200 fms. cable.
	H. C. P. V. Cavery.	Blowing very hard E. to E. by S. Noon E. S. E. 8 to 10 P. M. E. S. E. 10 to 12 S. E. Midnight about S. ..	Floating Light N. .. E. by E. ..	.. ..	.. ..	.. ..	.. ..	Heavy sea, squalls and rain throughout.
Noon 3d Oct. 1842.	Essex, ..	.. Fine. ..	19.10	89.25	29.886	.. ..	.. ..	[Eastward.
	Lion, ..	.. S. S. W. fine; heavy sea. ..	17.20½	85.21	.. ..	.. ..	.. ..	From 2d current of 90° to the
	At Pooree, ..	.. A. M. violent gusts from South abating to brisk gale. P. M. S. S. W. ..	.. ..	.. ..	.. ..	.. ..	.. ..	Ran 8 A. M. of 2d to 8 A. M. of 3d, 5 $\frac{1}{10}$ inches.
	At Cuttack, ..	.. A. M. a lull. 6 A. M. strong breeze E. S. E. & S. E. increasing, latterly moderate.	.. ..	.. ..	.. ..	.. ..	.. ..
	At Pooree, ..	.. A. M. a lull. 6 A. M. strong breeze E. S. E. and S. E. P. M. moderating. ..	.. ..	.. ..	.. ..	.. ..	.. ..
	Eliza, ..	.. A. M. strong gale S. S. E. but clearing away. Noon strong winds and fair. Midnight strong Southerly winds. ..	19.46	88.0	.. ..	6 A. M. 29.40 2 P. M. 29.56	82 84	

Date.	Name of Places or Ships.	Winds and Weather.	Lat. N.	Long. E.	Bar.	Simp.	Ther.	Remarks.
Noon 3d Oct. 1842.	Emerald Isle, .. Halifax Packet, ..	Fine, drawing to S. S. W. Wind S. S. W. .. ..	.. ..	.. ..	.. .. .. 29.40	28.50 29.50	84	
	H. C. F. L. V. Hope,	<i>H. C. Pilot and Light Vessels.</i>						
		A. M. Heavy gale H. to S. E. ... daylight moderate S. E. 8 A. M. blowing hard and lulls, a S. S. E. Noon S. clearing. Sunset heavy gusts, South to midnight strong Southerly winds and fine, heavy sea. ....	.. ..	.. ..	8 A. M. 29.42 Noon 29.57 8 P. M. 29.65	.. .. .. .. .. ..	84 84 83	
	H. C. F. L. V. Beacon,	Stormy gales E. S. E. to fresh gales at daylight E. S. E. to S. S. E. 8 A. M. clearing. Noon S. S. E. and fine. 4 P. M. strong S. S. E. to moderate breezes at midnight.	Station.					
	H. C. P. V. Saugor,	Weather breaking. Noon S. Eng Lt. E to S. S. E. Midnight strong Southerly breezes. S. E. 4'	b N 6h Do					
	H. C. P. V. Megna,	4.30 Heavy gale E. to E. S. E. Daylight E. N. E. to E. S. E. 2 P. M. wind shifted to S. and S. S. W. gale much abated at 8 P. M., when fresh breezes S. to S. S. W.						
	H. C. P. V. Krishna,	Daylight strong breeze S. E., latterly S. S. E.	.. ..	.. ..	.. ..	.. ..	.. ..	Heavy sea throughout.
	H. C. P. V. Cavery,	Midnight to 2 A. M. S. S. E. Eng Lt. N. ... to S. S. W. to 4 A. M. S. S. E. by E. E. Noon S. W. by S. P. M. S. S. W. .. ..	.. ..	.. ..	.. ..	.. ..	.. ..	Heavy sea and hard squalls.

	Name of Places or Ships.	Winds and Weather.	Lat. N.	Long. E.	Barometer.	Therm.	Remarks.
Noon.	Lion, ..	.. Squally but fine, ..	20.23	..	..	..	.. Soundings 80 fms. saw a dismast- ed Vessel.
4th Oct 1842.	At Pooree, ..	.. Fine, with fresh S. W. breezes. ..					
	At Cuttack, ..	.. A. M. increasing North, N. strong gale Northerly; furious squalls N. and N. E. Midnight rasing gale N. and N. N. E.					
	Eliza, ..	.. Strong breeze S. S. E. to South, subsiding gradually.	20.12	87.58	..	..	Strong set W. S. W.
	H. C. F. L. V. Hope,	Strong Southerly and S. S. E. breezes and unsettled, latterly fine.					
	H. C. F. L. V. Beacon,	..					
	H. C. P. V. Saugor,*	Southerly and hazy weather.					
	H. C. P. V. Megna,*	S. S. E. to S. and fine.					
	H. C. P. V. Krishna,	Pleasant breezes S. S. W. to S. ..					
	H. C. P. V. Caverry,	Fine S. S. E. to South.					

H. C. Pilot and Light Vessels.

8 A. M. 29.73 .. 82
 Noon 2.68 .. 85
 8 P. M. 29.66 .. 83

NOTE.—In replying to some queries, Mr. Branch Pilot Ceans, H. C. P. Saugor obliged me with the following the italics are mine.
 The last gale was attended with few of the general signs that generally appear in these Latitudes On the 30th of September, the weather had a fine appearance, as if the monsoon was about to set in; we had a nice N. E. breeze. 30th at night it grew cloudy and heavy rainy appearance to the Eastward and S. E.
 Towards midnight these clouds assumed the most singular appearance, by which I mean, that it lightened like the flash of a gun (no report of thunder,) and then spread in thin sheet lightning along the whole horizon from about E. by N. to S. E. It had so singular an appearance in the clouds, that I remarked it to several Officers on board at the time, and the universal opinion was, that they had had weather to the Eastward; but that it would not reach us, or only in the shape of rain. On the 1st October, at 1 A. M. we had a smart squall at E. S. E. with thunder, lightning and very heavy rain. At day light the weather did not look at all suspicious. At this time there was not any set, but a long heavy swell rolling in from the S. E. as if it was blowing hard in that quarter. As the day advanced, so the wind increased in squalls, the set increased also to about three knots to the W. N. W. on the flood, and about H. S. W. on the ebb.
 2d October, with the ebb the sea rose to a tremendous height, as you will see by the sufferings of the Saugor in her Log
 3d. Sea abating very little till we got to the Eastward into deeper water.
 4th. All over; fine serene sky with light S. W. winds, and light showers of rain at intervals
 Our Barometer was very high 29.30, to 29.28, the whole of the gale.
 4th November. 1842.

In reply to some enquiries, Mr. Branch Pilot SHARLING favours me with the following Note relative to the Westerly set which prevails in these Gales.

The reason that the rate of current was left out in the logs, is, that I thought it would be of no use, but as you wish for it, the set run to W. N. W. on the flood, and on the ebb to W. S. W. from 3 to 3½ knots.

The “*Megna*” has no Barometer on board.

SUMMARY.

I now proceed to state the grounds on which I have laid down the track assigned to these Storms on the Chart.

On the 1st October.—Commencing from the Southward, we find by our tables that the *Lion* in 13° N. had nothing but a strong W. S. W. monsoon, but the *Essex* in 16° N., longitude 83° 50' E. at noon had a falling Barometer from 29.836 to 29.586 at midnight with the wind increasing to a N. N. E. gale at that time. At Pooree and Cuttack the storm commences also “at night” on the 1st, with strong breeze from the North, and the *Eliza* standing to sea, was at midnight in 18° 30' N., longitude 89° 0' E. with her gale commencing also at N. N. E.

Of these data, the *Lion's* breeze was doubtless the monsoon, and the variable squalls of the *Essex* from W. S. W. to N. N. E. at midnight, the first effects of the storms, which as the ship was only 80 miles from the high land of Vizagapatam and the ranges of hills close to and at the back of that part, were probably deflected to a N. N. E. instead of

* I take this latitude as set down, but it seems to me at least 20 miles too far to the Southward, for the *Eliza* on 30th September, at 7 P. M. had the Light Vessel bearing North, let us say at most 15 miles. She had then to midnight light baffling airs from North to South alternately, when she could not have made more than 10 miles more of Southing, or 25 miles from the Light Vessel in all. On the 1st, she had an increasing breeze of about 5 knots to 3 P. M. when she hove to, calling this 15 hours' run and at 6 knots it is but 90 miles, in all 115 miles. From 3 P. M. to midnight she was hove to, and allowing her to have made 2 miles per hour of Southing, or say 18 miles, this is but 133 miles in all, and part of it on a S. S. E. course. Now from the outer Light Vessel in lat. 21° 04' to Lat. 18° 30' there is a difference of 154 miles of latitude; while as above, we can make at the most but 133. I think this must have been an error of the copyist, but have taken it as set down, being always unwilling to assume error in documents, unless they are evidently against common sense.

a N. N. W. gale, as the circles of them if extended to her position would require, as shewn by the arrow-line across the track of the *Essex*.

Captain McCarthy of the *Eliza* states, as before said, his gale to have "begun" at midnight from the N. N. E. in latitude about $18^{\circ} 30' N.$, longitude $89^{\circ} 0' E.$, its centre then must have borne about E. S. E. from him, at what distance we cannot exactly say; but I have taken it at 100 miles by projecting his subsequent drift, (as marked on the chart,) to Noon, when he had the centre of the storm passing him, and the shift of wind to S. S. E., and I have allowed also on the same grounds, that from midnight 1st October to Noon 2nd, the track of the storm was due West. This would place the centre of it at Noon on the 2d in latitude $17^{\circ} 50' N.$, longitude $88^{\circ} 40' E.$, as I have marked it; and this position being about on the meridian of the Light Vessels and Pilot station, gives them the Easterly winds and weather which they really had, being on the outskirts of a storm passing their meridian. I have also, it will be seen, marked the supposed place of the centre of this storm at midnight between the 1st and 2nd, and I need not I hope repeat here, that the whole track might have been a curve, or a succession of curves, for any thing we yet know, and that the strait lines are merely used to connect conveniently one point with another, and guide the eye.

But having thus marked the centre of the *Eliza's* hurricane at Noon on the 2nd, and we cannot well be far wrong in this, unless as before stated, there is any error in her latitude, we find that in the report from Pooree the Northerly gale which had blown there, increasing in strength from the night of the 1st, shifted at 6 p. m. to E. N. E., shewing that a centre of some rotatory storm had passed close to the station, or rather that the station was close to the verge of its calm space if there was one; since the gale abated in violence for about half an hour, and then blew with renewed strength, veering to the S. E. by 8 p. m., &c.

Now from the spot where we have marked the centre of the *Eliza's* hurricane to Pooree is a distance of 208 miles, and as the *Eliza* had her shift at Noon, and that of Pooree took place at 6 p. m., the interval of time is only 6 hours, during which, if it was the same storm, it must therefore have travelled at the rate of 39 miles an hour. This is a much higher rate than any we have yet found in the Eastern seas,

or indeed in any part of the world ; the highest rate supposed being I think 24 miles per hour in the Eastern seas, which I have inferred (6th Memoir, p. 699, vol. xi. of Journal of the Asiatic Society,) may have been the rate of the *Magicienne* and *St. Paul's* hurricane in the China sea, and 30 miles per hour assigned by Mr. Redfield, as that of the Atlantic storm delineated as Track No. VIII, in his Storm chart of 1835. Both these are much below this rate of 39 miles per hour, but we have good proof here, that it did occur, for the time must be correct, and the *Eliza's* position cannot be very far wrong, as to distance from Pooree.

Assuming then this rate for the present as one tolerably well ascertained, the reader will notice, that I have marked on the chart a track parallel to the former one, which starting from the supposed place of the centre of the storm at midnight 1st to 2d October, gives another centre at Noon of the 2d, and terminates at Cuttack. This marks the supposed place of the centre of the *Halifax Packet* and *Emerald Isle's* storm, which cannot, I take it, have been the same as that of the *Eliza*.

Before going into the examination of this question, however, I would request attention to the log and track of the *Tenasserim* Steamer.

This vessel was steering up from the S. Westward, passing Cape Negrais at about 120 miles to the Westward, and we find that on the 29th, she had the winds squally and variable from W. N. W. to N. W., and even North, when in about the latitude of the Cape, and these N. W. breezes with thick cloudy weather and a heavy cross sea continued till Noon on the 30th, as if she was skirting the S. Western quadrant of a storm forming between her and the Coast of Arracan, a supposition strengthened by the fact, that at Kyook Phyoo, which is only 190 miles to the N. E. of her track on these days, the winds were at S. E. as they ought to be if a circular motion existed or was forming. The weather, however, which was fine at Kyook Phyoo, was not decidedly a gale with the *Tenasserim* till the 30th, so we cannot on such slender grounds say, that any vortex really was formed ; but *if there was so*, and if it had remained nearly stationary for the 29th and 30th, the winds and weather experienced by this vessel were such as it would produce. Is this really an instance of the stationary formation of a storm ?

About noon on the 30th, we find that the *Tenasserim* then in latitude $17^{\circ} 24'$, longitude $91^{\circ} 28'$, had had the weather severe enough from the N. Westward to be lying to from 2 A. M., and that the wind then *shifted* to a gale from the S. S. W., which kept her under storm stay sails for the rest of the 24 hours. This shift, again, is what should occur, if we suppose, as before, a vortex forming to the N. E. of her track on the preceding days, and then suddenly moving on to the W. N. W., its centre passing near to the Northward of her position, for such conditions could give exactly a shift from N. W. to S. S. W. I have marked two small circles on the charts to guide the eye in considering this supposition, which I merely make in the absence of better data to regulate our views. I need not again repeat that storms must be *somewhere* and *somehow*, and the faintest light thrown on the phenomenon of their beginnings is of importance.*

We may perhaps assume this place close to the *Tenasserim* at Noon on the 30th, to have been the centre of the nascent storm on that day, and that while the vessel was drifting to the Northward with a S. S. Westerly gale, the storm was passing slowly to the Westward. This would gradually bring the wind for her to the S. S. E. as she got upon the N. E. quadrant of the storm, and so she, in effect, had it by 6 A. M. the morning of the 1st October, when she bore away to the N. W. by N., and running always on the N. E. quadrants of the two storms, had heavy S. Easterly breezes with a heavy Southerly sea to the Sand-heads. I regret much that this vessel's log is in some respects imperfect, and above all, that though a Government Steamer, she had apparently neither Barometer nor Sympiesometer on board! for no observations of either are given. Observations of good instruments in her position would have been invaluable.

We should not forget to take into account in weighing all this, that Cape Negrais is a notorious neighbourhood for variable winds and shifting storms and gales, and that the *Tenasserim's* weather *may* have been mere local variations of the monsoon, and that thus the

* I have supposed here and in former papers a circular storm forming and *then* moving forward, i. e. remaining stationary, or nearly so, at first. We do not know if the dust-whirlwinds, so common in hot climates, and water spouts are generated by the same causes, and subject to the same laws, but both these phenomena certainly do what I have here supposed the storm (or storms) to do, that is, many of them are stationary or nearly so while forming, and then to use Bruce's words "stalk forward."

storms may have been generated 24 hours or more after she had crossed those parts of the Bay where our first circles are struck, and I have thus left the large one, which depends on the calculations derived from the *Eliza's* log, that the reader may weigh the probabilities between the two suppositions, which are, the one that between the 29th and 2nd of October, or during three days, the storm was forming and slowly moving on ; and the other, that it formed and moved up as far between noon of the 1st and noon of the 2nd, as between noon of the 2nd and the time of the shift at Pooree, or at a rate approaching to such a velocity ; which would then be the last supposed case of the storms having really crossed this spot twenty-four or more hours after the *Tenasserim* had done so.

We now return to the consideration of the Northernmost of the two tracks which I have laid down, or that of the *Emerald Isle* and *Halifax Packet's* storm.

The *Halifax Packet* was by her log at noon on the 30th in lat. $21^{\circ} 18'$ long. $88^{\circ} 40'$ which I have marked ; but there is no datum of any sort to show where she was at noon on the 1st, and I have thus laid down her place on the 2d only, when the hurricane having dismasted her had passed on, leaving the wind at South with her at noon.

The wind is not marked during the ten hours from midnight ; viz. from 2 A. M., when the Barometer had fallen to 27.90, to noon ; but as it was veering from N. N. E. to a gale at East on the preceding day, we may take it to have been in its highest fury, veering from E. S. E. to S. E., and eventually to South, as it passed on ; which agrees, as will be seen with her track, as her position between 2 A. M. and noon should lie a little to the S. E. of where it is at noon, as she must have been drifting to the N. West, both with the wind and with the storm wave.

The *Emerald Isle's* log describes a very rapidly approaching storm, of which, says Capt. Scales, “ the squalls rose in the S. E. quarter, but struck us about East.” This is an exact description of a circular storm travelling upon a track to pass to the Southward of the vessel, and perhaps, if we may use the expression, “ throwing off ” squalls from its periphery. By 5 A. M. on the 2d, the wind was about E. S. E., “ increasing with fearful rapidity, blowing heaviest from S. E.” which

in fact was the time at which he was nearest to the centre, and ending, as it should do, at South when it had passed on. At Cuttack they had by noon on the 2d an increasing gale North and N. N. E. ; by 4 P. M. strong gale North,* with furious squalls, and this continuing with little variations till 3 A. M. of the 3d, when a lull took place, followed by a change to E S. E. and S. E. The strength of the gale, says Dr. Minto, was from noon till sun-set of the 2d, while it was moderating with the ships as before remarked.

Having thus described, briefly, the weather experienced on these two tracks, it may be useful to shew by a comparative table, that they *could not* be the same storm ; for at first sight, one is inclined to take them as such, and the fact of two severe hurricanes at once, of small diameters travelling with great rapidity on nearly *parallel* lines is a new acquisition to our storm knowledge, and will serve perhaps not only in future to explain many phænomena which are not now well understood, but to guide the perplexed seaman with comparative safety, as I shall in the sequel shew. It is evident, however, that our first care is to prove, that the phænomena about which we reason did really occur. We have already shewn this, and I think with a tolerable degree of certainty ; but the negative proof will also greatly assist our views. Not forgetting my remarks on the *Eliza's* position as possibly twenty miles too far to the South, let us now see how the ships *Eliza*, *Halifax Packet*, and *Emerald Isle*, were situated during their storms ; what were the winds and weather they had ; and what were those that they *ought* to have had if they were all in the same storm ; and to the ships we will also add the winds and weather at Cuttack and Pooree, beginning from midnight between the 1st and 2nd October, which is the earliest time at which it was felt by the *Eliza*.

The *Eliza* at this time was about in latitude 18° 30', longitude 89°, and the storm had then fully begun with her from the N. N. E.

Now if all the Ships were in one storm,—

	Should have had the wind about	But had it about
The <i>Halifax Packet</i> bearing from the <i>Eliza</i> about N. N. W., distance 40 miles,	N. E. by N.	E. S. E.

* While it was veering to South, and at South, with the *Emerald Isle* and *Halifax Packet*, moderating from S. S. E. with the *Eliza*, and shifting at 6 P. M. at Pooree!

	Should have had the wind about	But had it about
The <i>Emerald Isle</i> bearing from the <i>Eliza</i> about N. N. W. 130 miles,	N. E. by N.	E. by S.
*At Pooree, distance 200 miles, E. N. E. from the <i>Eliza</i> ,	N. N. E.	North.
*At Cuttack, distance 210 miles, N. E. by E. from the <i>Eliza</i> ,	N. E. by N.	North.

At Noon on the 2d, or 12 hours later, we find that the centre of a storm had just passed the *Eliza*, which vessel was then about in latitude $17^{\circ} 45' N.$, longitude $88^{\circ} 48' E.$ Now at this time, the *Eliza* had the wind at S. S. E. blowing a hurricane.

And the other ships, if the storm were the same, should have had the winds as follows:—

	Should have had the wind about	But had it about
<i>Halifax Packet</i> bearing from the <i>Eliza</i> North a little Westerly, 105 miles,	Due East full hurricane.	South. hurricane abating.
<i>Emerald Isle</i> bearing from the <i>Eliza</i> NbW. 145 miles,	East full hurricane.	S. E. full hurricane.
At Pooree bearing from the <i>Eliza</i> about N. W. miles,	N. E.	North.
At Cuttack bearing from the <i>Eliza</i> about NWbN. miles,	NEbE.	NbE.

These two statements will, I think, sufficiently demonstrate, that the storms were not the same; and it will be seen on examination, that the supposition of *two* storms explains all the anomalies satisfactorily.

A few words more on this subject will, however, I think dissipate any doubts. I have already remarked, page 801-802, on the rate at which the *Eliza's* storm travelled to Pooree from the undoubted station of its centre at noon of the 2nd.

Now as the shift of wind from North to E. S. E. took place, as we have seen, at Pooree at 6 p. m. of the 2nd, we should naturally look to find that, if the storms were the same, the wind at Cuttack, which is fifty miles to the North of it, veered also in such a way as to coincide with this change; or at all events, (as it was on shore,) *nearly* so. But we find on the contrary, that this did *not* take place at all; and that at

* These two stations and the ship *Emerald Isle*, may be considered as not at this time within the limits of the storm.

Cuttack it was 6 hours later, or A. M. of the 3rd that they had a lull and the wind veering subsequently from N. and N. N. E. at midnight of the 2nd, to S. E. at 6 A. M. on the 3rd.

The supposition then here is, that as 39 miles per hour is so very high a rate of travelling, this Cuttack storm was that of the *Eliza*, of which the rate of travelling would then be reduced to 18.3 miles per hour, the distance from the place of the centre of the *Eliza's* storm on the 2nd to Cuttack being 220 miles, and the time from Noon 2nd to A. M. 3rd, say 12 hours.

But if we look at the Charts, we shall see that, had it been the case that this Cuttack storm was the same hurricane, it must have passed within a short distance of the *Emerald Isle*, (50 miles, if we have rightly estimated her position,) and still closer to the *Halifax Packet*, and that it must have been, taking it to have moved through equal spaces in equal times, nearest to the *Emerald Isle*, at about 7 P. M. of the 2nd, when she should consequently have had the hurricane in full force. This, however, is *not* the case, for by her log it is plain, that the hardest part of the gale was *over* by 6 P. M., when the wind had veered to South; whereas on our supposition, it would have been a furious hurricane at S. E., and the same, with a little variation as to time holds good for the *Halifax Packet's* storm. These vessels' logs then will not admit of our considering the Cuttack storm as the principal, or the only one, and there is moreover another obstacle to our so doing; viz. that while the Pooree storm, which in fury is described by Dr. Cumberland, who saw both, as one-eighth more violent than that of 1840,* seems, to use a familiar word, "naturally" that of the *Eliza*; that of Cuttack was but a smart gale blowing down a few trees. As to the diameters of these storms, Mr. Redfield remarks, that his storm track No. VIII, of 1835, was probably not more than 100 miles in diameter, and the Coringa hurricane of 1839 certainly contracted to about 150 miles in diameter, while it increased in fury. It will then be asked, "As what we are to consider this Cuttack storm?" I should say decidedly, that as shewn in my Seventh Memoir, it is another of those cases in which a violent hurricane coming up from seaward, with a strong monsoon blowing nearly at right angles to its track† divides

* See Third Memoir, Vol. ix p. 1021 and 1022, Journal of the Asiatic Society.

† Which we see by the logs of the *Essex* and *Lion* was the case.

into smaller storms, and no doubt the various repulsions to which a storm travelling at this high rate must have been subjected from the effects of the high land may have contributed to this effect, and that the Cuttack storm, like that of Midnapore in 1842, was a separate storm from that of Pooree, and I have thus marked it—the reader will judge if with sufficient warrant. The diminution of force may be accounted for partly, I think, by the vicinity of the Balasore Hills to Cuttack breaking up by their resistance the Northern half of it,* and partly from the interference of the two storms as they approached the land. The extreme suddenness of their approach, and severity of their effects while they lasted, sufficiently account for the dreadful losses to which I have alluded. It might also be made an additional argument for the uses of, and attention to Simpiesometers and Barometers. We have no traces of these storms inland to the Southward or South Westward in the Goomsoor country, where are situated the wild tribes of Khoonds, and to the Northward and North Westward, where the country between Sumbulpore and Balasore is almost as little known.† For these parts then our knowledge ends hereabouts.

The next trace we have of any storm inland is at Purulia, and here again the question arises, if this was either the Cuttack or Pooree storms, or an independent vortex. The distance from Cuttack to Purulia is in a direct line, measured on the Post Office map 240 miles, and the bearing Nbe., and from Pooree 290 miles. The change of wind took place at Pooree, as we have seen, at about 6 P. M. of the 2d, and at Cuttack about 6 A. M. on the 3d. The abatement of the Purulia storm took place also in the afternoon at Purulia, so that as far as we can ascertain from this Memorandum, we may take the centre of the storm, which if it was a rotatory one, passed to the Eastward of the station, to have been nearest the station at 10 A. M. on the 3rd. Now from 6 P. M. of the 2nd to 10 A. M. of the 3rd, is 16 hours of *time* between Pooree and Purulia, and from 6 A. M. of the

* See Mr. Bond's report from Balasore.

† The European reader unacquainted with India, will be surprised to hear this of districts only 200 and 300 miles from the metropolis of British India; but it is a fact that the very *names* of some of the Khoond tribes in Goomsoor have only become known to us since the war of 1836! and that there are still thereabouts sects and tribes of which we know indeed the names, but nothing more!

3rd to 10 A. M. of the same day, is 4 hours of *time* between Cuttack and Purulia. The first interval, of 16 hours, with the distance 290 miles, gives about 19 miles an hour for the rate of travelling; and the second interval of 4 hours with 250 miles of distance, gives 62 miles an hour! It seems then, that as far as time and distance go, taking into account the retardation which sea storms experience when they reach the land, it is *more* probable, or rather it is *quite possible*, that the Purulia gale may have been the Pooree hurricane, and that there is no possibility or probability that the Cuttack storm was so, for we know of no rate approaching to 62 miles per hour. All this is, however, but vague and unsatisfactory, but I am unwilling to leave any thing unexamined. We have seen so frequently instances of storms either forcing their way far inland, or being apparently lifted up by high lands and renewing themselves again at considerable distances, that we can only venture to state and weigh the probabilities without pronouncing dogmatically upon the connexion or non-connexion of the various storms when they appear to have some relationship. There are, however, two more circumstances to be stated, which must not be omitted, the one is that the retardation is in favour of the probability, that the storms were the same; and the other, that we may easily suppose the Pooree storm to have been turned off to the Northward by the ranges of hills behind that station. Mr. Bond's report from Balasore it will be seen distinctly points out the spur of the Balasore Neelghiris at Choramou, as the dividing line between the heavy storm at Pooree and the breeze at Balasore, Choramou being about 100 miles N. W. of Pooree and 60 N. W. of Cuttack, with the great valley of the Mahanuddee river between them; and vallies seem certainly to influence in various ways the tracks of storms.

We have next to attend to the reports from the various stations to the Northward and Westward of Purulia; viz. Gya, Patna, Pussawa and Allahabad, at which it is clear, that they had parts of, and at Patna the centre of a rotatory storm passing on the 6th and 7th. The first question which naturally occurs is again the same which we have already discussed, "*Was this the same storm as that at Pooree or a different one?*" I find it difficult to pronounce whether it was or was not, from the absence of documents by which it might be traced between Pooree and Gya. At Purulia indeed, there was cer-

tainly as we have seen a storm, and this apparently part of a rotatory one, and possibly that of Pooree, if it travelled 19 miles an hour. We have, as before said, no other intervening documents, so we are compelled to suppose either that the Pooree storm was, as clearly shewn in the case of the Calcutta storm of June,* lifted up by the ranges of hills, and did not descend again till it reached Purulia and Gya; or else it was a new storm, perhaps generated about Purulia, and travelling North and North-westerly. I have so marked it on the chart, but merely for the sake of connection, and by no means as affirming what it was; for the Purulia gale might have been quite an independent one. Beginning then at Gya, it will be found, that this place bears about N. by W. from Pooree, distance 390 miles. Now the centre of the Pooree storm passed that place at 6 P. M. of the 2nd October, and the centre of the Gya storm we may take to have passed that station at 6 A. M. on the 5th. From 6 P. M. of the 2nd to 6 A. M. of the 5th are 60 hours, which for a distance of 390 miles, gives 6.5 miles an hour, while the rate of the Pooree storm we find to have been 36 miles per hour at sea, and 19 miles on shore, which is a second retardation of rate so far beyond what we have hitherto seen, that it is much in favour of its being an independent storm. The track from Pooree to Gya it may be remarked, is however, analogous to those of the Calcutta storms of June 1842. Leaving out the strong S. Easterly breeze experienced by Mr. Peacock on the Bhagiretty, as, at most, a distant effect of some of these storms, we may commence on the 5th October, where we find that

At Gya, there was,	{ From 6 A. M. gale from S. E., furious at midnight, and lasting till 8 A. M. on the 6th.
At Patna,	{ Falling Barometer, rain and increasing gale from the East till midnight.
At Pussewa, latitude 25° 41', longitude 83° 03' distant about 168' N. W. by W. of Gya,	{ Barometer sunk 0.25 from the 3rd instant. P. M. high wind East and N. E. increasing to gale, with violent gusts at North by daylight of 6th.
At Allahabad, latitude 25° 27', longitude 81° 50' E., ..	{ By 8 P. M. on 4th, strong gusts and showers had increased to a gale East and E. N. E. At 8 A. M. 5th very strong, moderating and increasing again at midnight to a strong gale.

* See Seventh Memoir, Jour. As. Soc. Vol. xi, p. 1089.

Agra, } Unusual winds from the Eastward
and Simpiesometer falling.

ON THE 6TH OCTOBER.

At Gya,	{	At 8 A. M. S. E. gale <i>veering</i> * to S. W. and blowing till noon, when it moderated.
•		
At Patna,	{	From midnight furious gale, blowing down trees. Noon Barometer had fallen from 29.81 on the 4th to 29.51, wind shifted to South, time not marked. At 5 P. M. to the West, blowing furiously till midnight.
At Pussewa,		{
At Allahabad,	{	Gale continuing from East and E. N. E. till daylight, when moderating and veering to N. E. North, and finally West.

Allowing for the numerous disturbing causes which inland storms meet with, and for the general nature of the observations, it will be found that the circles I have marked on the chart shew the variations which are described in the winds as the storm travelled up to the North and by East, (the first instance of a storm track, trending to the *East* of the meridian,) from the neighbourhood of Gya, and passing not far from Patna and between it and Pussewa; though it might perhaps have been better placed about half way between both? But the word “shift,” used in Mr. Ravenshaw’s report from Patna, inclines me to believe, that the change was, if not a sudden, a very rapid one, whereas that at Pussewa was evidently a *veering* from North at 7 A. M. to N. N. W. at Noon, and N. W. at 1 P. M. or 4 points in 6 hours. Beyond Patna we have no farther trace of the storm.

I should thus be inclined to take this storm as quite a separate one. I have already remarked on and discussed the rates of travelling of the various storms, and no farther observations occur to me, except to remark on the very high rates of travelling, which the *Eliza*’s log and

* “Veering” and not “shifting;” and the careful use of these words is important; for the *sudden* shift, particularly with an interval of calm, indicates the passage of the central portion of a gale; the “veering” that it has passed *near* the spot.

Pooree report furnish us, which are as yet new in the Eastern Seas, and the remarkable confirmation of the fact of the dangerous Westerly set of 3 or 4 miles per hour prevailing at the Sand Heads, even when as in this case, the nearest centre of the nearest storm was at least 100 miles distant from the Light Vessels!

P.S.—I obtain, just as this sheet goes to press, two more documents. The abstract of the log of the Ship *Seringapatam*, Capt. Robertson, and the notes taken at Purulia, which Capt. Hannington had mislaid. The memorandum from the *Seringapatam* is as follows; she was bound to Madras:—

1st October, 1842.—Nautical Time.

Course and Distance	Lat. and Long. Noon	Bar.	Ther.
S. S. W.	19° 26' N. 86° 36' E.	29 60	83°

Wind and weather variable S. W., N. W., and S. E., with thunder and rain.

2nd Oct —S. S. W. 180. | 17° 39' 84° 32' | 29.50 83°

N W. strong breeze throughout.

This position it will be seen places the *Seringapatam* on nearly the same meridian as the *Essex*, but about 30 miles further to the Northward at Noon on the 2nd, and about 15 miles nearer to the track of the centre of the Pooree hurricane, as I have laid it down. Her Barometer is accordingly lower, and she had the N. W. breeze, (it would have been a *gale* had she been a degree less advanced on her track,) “a steady” one throughout, which is what *ought* to have occurred with her.

The following is the tabular statement of the storm at Purulia, as sent me by Capt. Hannington:—

*Meteorological Register kept at Purulia, during the Storm of the 2nd and 3rd of October, 1843, by Captain G. C. ARMSTRONG,
49th Native Infantry.*

Date.	Hour.	Barometer at Purulia.	Barometer reduced to the level of Calcutta.	Thermometer.		Direction of wind.	REMARKS.
				Attached.	Detached.		
2nd October,	8 P. M.	28.94	29.62	80½	78	E.	Strong breeze, increasing. Sea low, and driving fast.
Ditto,	10 P. M.	"	"	"	"	E.b.S.	Gusty, with alternate lulls.
Ditto,	11 P. M.	28.90	29.58	"	"	"	Fresh gale, a little rain.
3rd October,	2 A. M.	"	"	"	"	"	Ditto, more continuous, with occasional violent gusts.
Ditto,	5 A. M.	28.92	29.60	80	77	E.S.E.	Ditto, moderating a little, heavy rain since 3 A. M.
Ditto,	8 A. M.	28.94	29.62	"	"	E.	Fresh breeze, clearing up and moderating.
Ditto,	10 A. M.	28.96	29.64	80	77½	"	Breeze, moderating and abating.
Ditto,	Noon.	"	"	"	"	"	Light airs, heavy rain with lightning and thunder.

J. HANNYNGTON, *Principal Assistant.*

Maubhoom Division, Principal Assistant's Office, Purulia, the 11th November, 1842.

This document shews that, as I have supposed at p. 810, the Purulia storm, if it was any part of a circular one, was doubtless an independent one, both as regards those to the Southward and to the N. W. of that station, the little change indicating that it was, if circular, passing on nearly an East and West track to the South of Purulia.

H. P.

Notes on a curious species of Tiger or Jaguar, killed near the Snowy Range, north of Darjeeling. By Lieut. TICKELL, Bengal Native Infantry, Assistant Agent to the Governor General, S. W. Frontier.

The animal from which these notes are taken was killed by a Bhoitia, near the Snowy Range, in the northerly part of Sikkim, and its skin subsequently purchased by a gentleman who obligingly lent it to me for the purpose of sketching. The want of a better model to copy from, has probably rendered my drawing, with regard to outline, faulty in many points. But careful measurements, protracted on a scale, may give a tolerable approximation to true proportions and general aspect, and the markings of the skin are faithfully delineated, as well as the color of the fur carefully described.

Dimensions of the Skin.

		Feet.	Inches.
From nose to root of tail,	.. ..	3	5
Tail,	.. ..	2	10½
Centre of back, between the shoulders to			
sole of fore-paw, ... ..	.. ..	2	0½
From root of tail to sole of hind paw, ..	.. ..	2	1¾
„ nose to eye, .. ..	.. ..	0	4½
„ eye to ear, .. ..	.. ..	0	5½
„ ear to between shoulders,		0	8

Of the breadths of various parts I take no measure, for they are in places shrunk, and in others pulled out during the operation of flaying. The head is narrow and nose somewhat elongated, the muzzle approaching the attenuated form in some of the smaller cats, leading into “Viverrina.” Limbs and body bulky and low, and the tail very thick, long and furry. The hair on other parts is thick and soft, but shorter

than in the Leopard. Claws powerful. Lips, brows, and cheeks near the corners of the mouth, furnished with whitish vibrissæ.

Color.—Pale bistre brown, (a plain dullish clay brown,) fading on lower parts inside the limbs, and on cheeks and lips to pale rufous tawny. Centre of head covered with small longitudinal black spots, a few also about supercilium. Inferiorly and posteaally to eye, two narrow stripes reaching to molar angle, and produced, with broken intervals, by other broader stripes along the side and front of neck. A black band across throat, bases of ears black. From behind ears, all along mesial line of back, a double line of chain-like stripes, more or less interrupted and more or less parallel. On the nuchal region these diverge and afford room to an inner, smaller, similar chain. From each side these chains diverge three large ovate spaces, encircled by broken lines and patches, well defined posteaally, almost obsolete anteaally. The loins and flanks of the belly, instead of these large patches, have similar but smaller and more numerous ones; some nearly circular, all packed together so as to leave narrow intervals between them. On the limbs the markings are more irregular, consisting of zig-zag longitudinal patches, decreasing to spots on the carpal region. Paws (as nose) plain dull brown. Tail brown, thickly furred and marked black. Its end plain brown. The large ~~al~~ spaces and the smaller ones of the after-parts of the sides do not reach to the belly, which is marked with large irregular patches and lines. These marks are all, above and below, black. And the areas of the large encircled spaces, as also of the smaller ones, above-mentioned, are shaded with a darker tinge of brown, and the former are therein studded with black spots, which give the fur a rich and beautiful appearance.

Although I have not so named it above, I have little doubt that this animal is the same as the *Felis Macrocelis* of Temminck, known at Sumatra by the name of Rimau-dihan, or 'Tree Tiger', and minutely described in Jardine's Naturalist's Library in the volume on Felinæ. The ground-color of the body is there said to be greyish, not the slightest tinge of which is perceptible in the skin before me. The size of the present subject is also superior, its total length being six feet and three and a half inches. In all other respects the description exactly coincides. The bulky limbs, stout body and powerful retractile claws of the animal do not seem to accord well with Sir Stamford Raffles' description

of its innocuous habits, of its feeding almost entirely on birds, (caught in trees!) and on the poultry of the villagers, and of its becoming readily and permanently tame after capture.

The Lepchas here call the animal "Pungmar," and the Bhotias "Zik;" their accounts are widely different to the above. They describe it as an uncommonly fierce and wary animal, difficult to approach, and dangerous to attack, from its invariably turning on the assailant if wounded. It is a rarer animal than the "Sejjiak" or Leopard; but it is to be found in the vallies lying north of Darjeeling, in dense jungle, chiefly by the banks of rivers; the Ranget, Roongnoo, &c. affecting low places in preference to mountain tops. It approaches the villages of the Bhotias and Lepchas sometimes, and kills goats, pigs, &c.; of its predeliction for poultry, nothing is said by them; and of its propensity to climb trees, I could gather nothing satisfactory. The Lepchas affirm that it has been seen on trees, but that it ascends them *in play*, and not to seek food. Indeed the notion of such a large animal catching birds on trees, appears ridiculous. Altogether the accounts as received by me, of the "Pungmar" tally more with the description (as to disposition) of *Felis Nebulosus*, the "Rimau Maug" of the Sumatrans, as cursorily given in the work above referred to.

M Stanislas Julien on the Study of the Chinese Language. Translated for the Journal of the Asiatic Society. By HENRY PIDDINGTON, Sub-Secretary, Asiatic Society.

The Asiatic Society has just received from its author M. Stanislas Julien, a work entitled "*Exercices Pratiques d'Analyse de Syntax et de Lexigraphie Chinoise*," of which the subject is a critical examination of thirteen lines of a translation of a notice in the work of the Chinese traveller and author Hionen-tsang upon India, by M. Pauthier.

In this translation, M. Stanislas Julien detects ninety-four faults in thirteen lines! and his criticism is approved by the first Chinese scholars of England, Germany and Russia. His work is dedicated to his friend, Mr. Morrison. With this controversy we have nothing further to do than that it may serve to put us a little on our guard as to what some Chinese translations *may* be;* but the introduction to M. Julien's paper is so remarkable, as containing the opinions of a first rate Chinese scholar and a

* As for instance, some which were copied from the Canton Register into the Calcutta papers about a year or more ago, in which, in a single proclamation, half a dozen common English, and I believe some Latin quotations were inserted, and this we were gravely told, was a translation from a Chinese State Paper.—H. P.

man of letters, highly distinguished in other walks, on the study of the Chinese language, that I have thought it well worth translation; since at the present time, nothing which can encourage or facilitate the study of this language is indifferent to us, independent of its high interest in a mere philological point of view. This introduction I find, also appeared with his first controversial paper in the *Journal Asiatique*, for May 1841, but it is reprinted with the present pamphlet.

“The time is now happily far distant since it was generally believed in Europe, that the study of the Chinese language required, even in China, the whole life of a man of letters. M. Remusat has greatly contributed by his works and his teaching to destroy this prejudice, and if some men of learning yet give credit to it, it is because they have not taken the trouble to examine the question. This opinion would indeed be well-founded, if to speak, read, and write Chinese it were necessary to learn the forty-two thousand characters, which compose the great Dictionary, published in thirty-two octavo volumes by the emperor Khang-hi; for certainly not a single Chinese man of letters would be found capable of such a prodigious effort of memory. But it is as useless for a Chinese, or a European to know, and to be able to write all the characters of the *Khang-hi-toen-tien*, (Khang-hi's Dictionary,) as for a foreigner studying our language to be acquainted with all the words of the French Dictionary of Boiste, which in mere words is three times as rich. Supposing that the most complete of our Dictionaries contains, as is said, a hundred and twenty-four thousand words, we may say without fear of contradiction, that a foreigner who knows only three or four thousand, would be able to read the majority of French authors. More than a hundred thousand words, or terms, are relative to sciences, arts and trades, and which seldom occur in literary works. When the reader meets with them, he looks for them in a good Dictionary, and continues his reading without fancying that he does not understand French because he is unacquainted with some choice scientific or technological terms.

The case is exactly the same with the Chinese Dictionaries. The Emperor Khang-hi's would be reduced from forty-two thousand to six or eight thousand words,* if we were to subtract from it about ten thousand variations of ancient and obsolete characters, of names of men, of places, of mountains, and of rivers, and of the terms belonging to sciences and art.†

* Several with no meaning, Marshman's Introductory Remarks, p. 31.

† 1900 characters form the materials of the language, Marshman, p. 37.

Under the *Han* dynasty, says the author of the Vocabulary of the *Kings*, candidates for the offices of historians of the empire were required to know at least nine thousand different characters. Now, as the complete annals of any epoch must comprise, in methodical order, almost every subject of literature and science, it would appear from this alone, that the number of characters which the most learned men were required to know, differs prodigiously from that which many persons in Europe suppose necessary for the lowest literary grades.

We may indeed suppose, that these last hardly require more than five or six thousand words to speak, read, and write Chinese. In fact, the four classic books do not contain more than two thousand and four hundred characters; but nevertheless, a person who has carefully studied them, and who is at the same time master of the principles of Chinese syntax (*construction*,) can understand without assistance almost all books of history, geography, and philosophy. In China the candidates for the literary rank of Kiu-jin, (Licentiate,) are only required to have well studied the four classic books, and any one of the *Kings* (canonical books,) which they may choose.

From what has been said, the study of the Chinese language does not require, as far as relates to the necessary words, more trouble than any foreign language; such as German for instance, which is commenced without any fear, and with a certainty of mastering it.* But the difficulty in the study of Chinese does not consist in the number of words. It is well known, that this language is a monosyllabic one, and that its words do not allow of inflexions indicating in substantives and adjectives genders, numbers and cases, and in verbs, times and persons. Moreover, the same word sometimes changes its value in changing its place, and becomes a substantive and adjective; a passive active, or neuter verb or adverb. The word *chew* for example, may signify good (substantive,) good (adjective,) esteem good (approve,) and good adverbially taken; when the mechanism of the Chinese language is understood this word is as explicit in its different positions as the Latin words *bonum*, *bonus*, *bonum judicare*, *bené*.

The English language has some similarity to this. Certain substantives by their position, and by the words which accompany them, become sometimes adjectives, verbs, and adverbs, without the

* See also Marshman's Introductory Remarks, p. 3.

least difficulty arising therefrom to the reader or hearer. Thus the word *cut*, is an adjective in "a *cut* wig," and a verb in "to *cut* timber."

The word *present* (a gift) is an adjective in "the *present* season," and a verb in "to *present* a man."*

The word *head* is an adjective in "the *head* workman," and a verb in "to *head* the people."

In Chinese, the word *cheou* (head,) may become, according to circumstances, adjective or verb, or an adverb.† The English word "*pen*" is a verb in "to *pen*," (write,) a letter.

The Chinese word *pi* (pencil) has the same scope; it may signify, according to its position, "*pencil*," and "to write with a pencil."

It follows then, that to understand Chinese, it is not sufficient to be acquainted with a great number of words. Although the nine thousand words formerly required to become one of the historians of the empire should be perfectly known by heart, this alone would not suffice to understand half a page of the easiest Chinese text.

To be able to give to each word the value resulting from its position, and to catch the varying sense of the prepositions and particles,‡ which determine the reciprocal relation of words, the language must be studied systematically; the student must have analysed, and I might say *dissected*, philosophically, the best translated works by the Missionaries, or by the learned* of Europe, who have taken them for guides. He will then be able to distinguish with certainty, the positional values (*valeurs de position*,) upon which the knowledge of the Chinese language mostly depends. In this respect its difficulties are of a peculiar kind; but not greater nor more numerous than those of other languages of the East or of Asia. We have seen many persons, who after some years of study and application, have been able to read, translate or analyse with all desirable exactitude, ancient or modern Chinese works relating to their studies. I may name M. Bazin, senior, who has given to the learned world a first volume of Chinese Dramas, completely translated in prose and verse, and who is now about to publish the complete translation of a celebrated Drama in twenty-

* Our English readers will observe, that M. Julien has here forgotten the pronunciation which makes a different word of it. He probably alludes here to the mere spelling, which to the eye of a Chinese, as to that of a child, makes it the same word as the substantive.

† Examples from Marshman, p. 195.

‡ Marshman alludes to prepositive characters to mark the cases of nouns, and again, p. 994, "every termination is supplied by position."

four acts.* M. Theodore Pavie, who had studied Sanscrit and Chinese at the same time, acquired in a few years a remarkable knowledge of these two languages, and to him we owe a volume of Chinese Novels, not less distinguished by the elegance of their style, than by the fidelity of the translation; and M. Biot, junior, whose early studies and a solid knowledge of the Chinese language, have enabled him to examine, with much advantage to science, books written in the ancient dialect, and relative to the history, geography, statistics, or arts of China. The readers of the *Journal Asiatique* have often had occasion to appreciate the Memoirs with which he has enriched its pages. He is now preparing for the press the Alphabetic Concordance of the names of Chinese towns of the first, second, and third rank, which have been changed under different dynasties. This will reflect new honour on the author, and new light upon our knowledge. I might add to these names, those of M. Leon Pages, Advocate, who has just concluded a French translation of the four classic books (*Kings*) with a running commentary, and of his cousin, M. Edmé Mechain, (grandson of the astronomer,) lost to science by an early death when Vice-Consul at Smyrna. M. Mechain had learnt Chinese when a law student, and only at his leisure hours, and yet in three years he was able to read with facility. Son of a Consul General, and pursuing that profession, he hoped to become one day French Consul in China, and that his knowledge of the languages of the celestial empire might be of use to our commerce, our arts, and our literature. His name as a Chinese scholar would be still unknown, were it not that I have felt it a duty to mention here his zeal and his remarkable acquirements in Chinese.

It is thus a well established fact, both from the examples which I have quoted, and from a sort of public notoriety, that in a few years a tolerable knowledge of Chinese may be acquired. But there is *one indispensable condition*, which is to study with care the laws of construction, the fixed principles which determine the grammatical functions of the words and modify their value according to the place in which they stand in the sentence; the value of the prepositions which are sometimes significative as in other languages, and sometimes lose their usual meanings, becoming purely phonetic marks of regimen,

* This Drama, entitled "*Pi-Pa-ki*, or the History of the Lute," was published in 1841, by Dupont.

as have I believe demonstrated in the dissertation at the close of my Sinico-Latin edition of the works of the Chinese philosopher *Meng-tseu*. If these rules, which are for Sinologists what those of inflexion are in other languages, and which are their best guides in interpreting a passage, be neglected, the Chinese language may be studied for many years without ever acquiring the degree of knowledge necessary to become a faithful translator."

Proceedings of the Asiatic Society.

(Monday Evening, the 4th September, 1843.)

The regular monthly meeting of the Society was held at the rooms on Monday the 4th September, at the usual hour. The Honorable the President in the chair.

The following Members proposed at the August meeting were ballotted for, and declared duly elected. The usual communication was ordered to be made to them :—

Major W. Anderson, B. H. A.; F. Mouat, Esq. M. D., B. M. S.; and Capt. Stephen, B. N. I., A. D. C. to the Honorable the Deputy Governor.

And the following new Member was proposed :—

Dr. Sprenger, B. M. S. proposed by the Honorable Sir H. Seton, seconded by Mr. H. Piddington.

The following list of Books, presented and purchased, was read :—

Books received for the Meeting of the Asiatic Society, on the 4th September, 1843.

The Oriental Christian Spectator, second series. Bombay, August 1843, vol. iv, No. 8.—Presented by the Editor.

Journal of the Bombay Branch of the Royal Asiatic Society. Bombay, April 1843, No. 5.—Presented by the Society.

Journal Asiatique, 3me série, tome vix. Juillet à October 1842, Nos. 76 à 78, Paris.—Presented by the Society.

Jamieson's Edinburgh New Philosophical Journal, Edinburgh, 1843, vol. xxiv, No. 67.—Presented by the Author.

Proceedings of the Geological Society of London, 1842, vol. iii, part ii, No. 91.—Presented by the Society.

Proceedings of the Academy of Natural Sciences of Philadelphia, for August, September and October 1842, Nos. 17, 18, and 19.—From the Academy, (two copies.)

London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science, third series, London, January 1843, vol. xxii. Nos. 141 and 142.

Transactions of the Royal Astronomical Society, London, 1842-43, vols. xii, xiii, and xiv.—From the Astronomical Society.

Early Records in Equity. Calcutta, 1842.—Presented by the Hon'ble Sir H. W. Seton.

Calendars of the Proceedings in Chancery in the reign of Queen Elizabeth.—Presented by the Hon'ble Sir H. W. Seton.

Bulletin de la Société de Géographie, 2me série, Paris 1842, tome xvii.

Naturalist's Library.—Ornithology, vol. xiv, Nectariniadæ, or Sun-Birds. Edinburgh, 1843.—From the Booksellers.

Pauthier, Réponse a l'Examen Critique, Paris, 1842.—Presented by the Author.

Pauthier, Examen Méthodique des faits qui concernent Le Thian-Tchu ou L'Inde, Paris, 1840.—Presented by the Author.

Pauthier, Vindiciæ Sinicæ. Dernier Réponse à M. S. Julien, Paris 1842.—Presented by the Author.

Bopp, Vergleichende Grammatik des Sanskrit, Zend, Griechischen, &c. &c. Berlin, 1842, Vierte Abtheilung.—Presented by the Author.

The Secretary read the following Memoranda :—

1. It has been suggested by several Members, and the Secretary begs now to mention it, that the works of reference belonging to the Library of Fort William, which as a temporary arrangement were made over to the Public Library, might more appropriately be deposited in that of the Society, and this with more advantage to the public in general.

2. Government having requested a further supply of fifty copies of the Scinde Vocabulary, these have been sent from the copies placed for sale with the Booksellers. The copies for sale at Bombay have been sent to Messrs. Collett and Co.

3. It has been suggested to Government, that at the present time a reprint of Lieut. Leech's Grammar and Praxis, &c. of the Brahoees, Beloochee and Punjabee languages, which forms about 61 pp. of the 7th vol. of the Journal would be most useful with reference to our new acquisitions in the West of India. In consequence of this, a reprint has been sanctioned, and is now in progress at Bishop's College Press.

With reference to the first of these Memoranda, it was ordered, that the Secretary be requested to inquire into and state to the Committee of Papers, what were the conditions under which the works in question were deposited in the Public Library, and to frame thereupon an application for them in terms of his suggestion.

The Secretary farther reminded the Society, that two works from Messrs. Ostell, i. e. Cuvier's Mammiferes, and Swainson's Illustrations, had remained for inspection, and that some Nos. of Smith's Zoology of Southern Africa had also been sent for inspection by a private individual, who was desirous of disposing of them. Some conversation took place, when it was agreed upon, that the purchase of Cuvier should be farther considered, with reference to the possibility of obtaining a copy cheaper from Europe. The Honorable the President begged to be allowed to present to the Society, Swainson's Illustrations, and Dr. Smith's Zoology of Southern Africa in testimony of his high appreciation of the indefatigable labours of Mr. Blyth

in the Zoological Department, and his desire to assist and forward them. The best thanks of the Society were voted for this very liberal donation.

The following note from the Librarian, addressed to the Secretary, was read :—

To H. TORRENS, Esq. Secretary, Asiatic Society.

SIR,—I have the honour to forward to you the enclosed note of Mr. J. Thomason's, who desires me to bring to your notice, that some papers, published by the Royal Asiatic Society and the Bombay Branch Society are not in our Library.

The papers alluded to, are contained in the Transactions of the R. A. S. and the Journal of the B. B. S., and with regard to these publications I beg to state, that we have received only the first three volumes of the Transactions of the R. A. S.,* and there are only a few numbers of the above-mentioned Journal in our Library.

As these publications are most intimately connected with the progress of Oriental learning, I beg leave to propose, that they should be procured for the Library.

23rd August, 1843.

Your most obedient servant,

E. ROER.

It was ordered, that the works alluded to be completed for the Library.

Read the following letter, accompanying a valuable donation of rare Books by the Honorable Sir H. Seton, for which the thanks of the Society were voted :—

To the Secretary of the Asiatic Society.

SIR,—As it appears by the Catalogue lately published, that the Library of the Society, among the works published by the Record Commission, does not contain the Calendars of the Proceedings in Chancery in the Reign of Elizabeth, I beg to present it with a copy of them, together with an unpublished Tract relating to their contents.

I have the honor to be, &c.

Calcutta, 24th August, 1843.

H. W. SETON.

Read the following letter from the Under-Secretary to the Government of Bengal, sanctioning an allowance of Co's. Rupees 64 per mensem, for the expenses of the Museum of Economic Geology :—

No. 842.

From Under-Secretary to the Government of Bengal to H. TORRENS, Esq. Vice-President and Secretary, Asiatic Society.

SIR,—With reference to the second paragraph of my letter, No. 691, of the 3rd instant, I am directed to inform you, that the Honorable the Deputy Governor of Bengal, with the concurrence of the Government of India, is pleased to sanction the monthly sum of Co's. Rs. 64, for establishment and contingencies of the Museum of Economic Geology.

I have the honor to be, Sir,

Your most obedient servant,

Fort William, 31st July 1843.

A. TURNBULL,

Under-Secretary to the Government of Bengal.

* The Transactions of the R. A. S. are now published in the form of a Journal, which the Library possesses.

Read the following extract of a letter from Dr. Wise, B. M. S. to the Sub-Secretary, dated Dundee, 29th June, 1843.

I was hurried across Egypt in such a manner as prevented me from delivering the box of Books in person to Mohammud Alea, which the Asiatic Society, at your kind suggestion, charged me with. I sent it to the palace of Grand Cairo, and requested the British Consul and Clot Bey to see that it was delivered in a suitable manner. This I am sure they did, and to my great regret it was all I could do, as the Padshah was in Upper Egypt when I was at Cairo. After all the preparations I had made, the steam boat was not able to land our party at Cosseir on account of the weather, and I therefore came to England with the same mail I had come from India with.

Read letter from M. Delessert, returning thanks for the honor conferred on him by his election at the August meeting.

Read the following letter from Messrs. W. and H. Allen, the Society's Booksellers and Agents in London :—

HENRY PIDDINGTON, Esq.

SIR,—We have the pleasure to send you, as Secretary to the Asiatic Society, our account to this date. * We enclose the particulars of £43: 16: 4, against the Society for money paid, and books supplied by us. The account current annexed herewith gives credit for the publications of the Society sold during the year, which leaves a balance of £13: 18: 3, due to us.

We have hitherto been instructed to keep the account for the sales of the Journal separately, and the enclosed statement for the sales amounts to £32: 12: 0. The two accounts shewn, together, leave a balance of £18: 18: 9 in favor of the Society, and we leave you to determine the mode of settlement. We shall be most happy to honor your draft at 30 days' sight for either of the balances. If you draw for £32: 17: 0, then the Society will be indebted to us the balance of the account current.

We have the honor to be, Sir,

Your most obedient servants,

London, 30th June, 1843

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" " 109,	14	...	9	5	...	0 13 9
" " 110,	16	...	12	4	...	0 11 0
" " 111,	17	...	12	5	...	0 13 9
" " 112,	16	...	11	5	...	0 13 9
" " 113,	15	...	11	4	...	0 11 0
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" " 118,	25	...	*2 10	13	...	1 15 9
" " 119,	50	...	*13 10	27	...	3 14 3
" " 120,	50	...	*13 13	24	...	3 6 0
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" " 123,	50	...	*13 17	20	...	2 15 0
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	8vo. Parcel received to forward from Royal Geographical Society, ...	0 0 0	
	8vo. Parcel ditto from Geographical Society, ...	0 0 0	
	Shipping Expenses, &c. ...	0 1 6	
			0 4 0
Aug. 31,	Per Prince of Wales.—Journal des Savants, July, ...	0 0 0	
	8vo. Parcel received from Society of Arts enclosed, ...	0 0 0	
	Shipping Expenses, &c. ...	0 1 0	
			0 1 0
Sept. 30,	Per Windsor.—Journal des Savants, August, ...	0 0 0	
	8vo. Parcel received from Paris, and paid duty on the same, ...	0 4 6	
	Shipping Expenses, &c. ...	0 1 6	
			0 6 0
Nov. 19,	Per Zenobia.—Journal des Savants, September, ...	0 0 0	
	Royal 8vo. Parcel received to forward from Oriental Translation Fd. ...	0 0 0	
	8vo. Parcel from Geological Society, ...	0 0 0	
	Shipping Expenses, &c. ...	0 2 0	
			0 2 0
Dec. 23,	Per Stag.—Journal des Savants, October, ...	0 0 0	
	Niebuhr's History of Rome, vol. 3, 8vo. calf gilt, ...	1 2 0	
	8vo. Pamphlet from Geological Society enclosed, ...	0 0 0	
	Antiquitates Americanae, 1837, C. C. Rafer, imp. 4to. bound, ...	0 0 0	
	Shipping Expenses, &c. ...	0 3 0	
			1 5 0
1843.			
Jan. 25,	Per Carnatic.—Received to forward, ...		
	Bulletin de la Société Géographie, vol. 17, 8vo. ...	0 0 0	
	Paid Duty on the same, ...	0 1 0	
	8vo. Parcel received from Paris, ...	0 0 0	
	Paid Duty on ditto, ...	0 3 0	
	8vo. Pamphlet from Geological Society, ...	0 0 0	
	Jameson's Journal, No. 67, ...	0 0 0	
	Bopp, Vergleichende Grammatik, 4to. stitched, ...	0 0 0	
	Paid Duty on ditto, ...	0 1 6	
	Shipping Expenses, &c. ...	0 2 0	
			0 7 8
Mar. 23,	Per Patriot Queen.—Journal des Savants, November and December 1842, and January 1843, ...	0 0 0	
	Paid Subscription on Journal des Savants, January to Dec. 1843, ...	2 18 0	
	Received to forward, Julien Simple Exposé, &c. 8vo. stitched, ...	0 0 0	
	Received to forward, ...		
	Paid Duty on Julien Simple Exposé, &c. 8vo. stitched, ...	0 1 6	
	Tassy, Chapitre Inconnu du Coran, 8vo. stitched, ...	0 0 0	
	Shipping Expenses, &c. ...	0 4 0	
			3 3 6
May 18,	Per Seringapatam.—J. E. Gray, Spicilegia Zoologica, part 1, royal 4to. stitched, ...	0 7 0	
	Leach's Zoological Miscellany, colored, 3 vols. Royal 8vo. cloth, lettered, ...	4 13 0	
	G. R. Gray's List of the Genera of Birds with their Synonymes, 2nd Edition, 8vo. cloth, ...	0 9 0	
	Bibliothèque de M. Silvestre de Sacy, liv. 1, 8vo. stitched, and de Delhi a Bombay, par Roberts, and paid Duty on ditto, ...	0 2 6	
	Journal Asiatique, January and February, and paid Duty on ditto, ...	0 1 0	
	Transactions of the Geological Society, vol. 6, part 2, 4to. stitched, ...	0 0 0	
	Journal des Savants, February and March, ...	0 0 0	
	Report of the British Association for 1842, 8vo. bound, ...	0 0 0	
	Edinburgh Philosophical Journal, No. 68, ...	0 0 0	
	Philosophical Magazine, April and May, ...	0 0 0	
	Two Royal 8vo. Packets from the London Electrical Society, ...	0 0 0	
	Saadi, par Garcin de Tassy, 8vo. stitched, ...	0 0 0	
	Shipping Expenses, &c. ...	0 12 0	
			6 4 6
	Paid Subscription to Rafer's Antiquitates Americanae, 1837, 4to. bound, sent per "Stag," 23d December 1842, ...	3 0 0	
	Paid Subscription to Oriental Fund, for 1842 and 1843, two years, ...	21 0 0	
June 12,	Sundries per Essex.—As per Invoice stated, ...	4 13 0	
„ 30,	Sundry Postages to this date, ...	1 3 10	

And the following draft of reply to them was also read and approved of:—

Messrs. W. H. ALLEN AND CO., London.

DEAR SIRS,—By the July mail, I have the pleasure to acknowledge the receipt of your letters of the 17th and 30th June last, to the address of Mr. Piddington.

I note that the Marble Bust of the late James Prinsep, Esq. sent to you by Professor Wilson, to be forwarded to the Society has been shipped per ship "*Essex*;" on the arrival of the vessel, the Bust will be landed per bill of lading you forward.

The several statements of accounts forwarded with your letter of the 30th June last, have been found correct and in order; and although the Society is not disposed at present to disturb the account current closed to the 30th June 1843, by a balance against the Society of £13: 8: 3; yet I am desired to say, that it is susceptible of readjustment with reference to my letter of the 16th February,* as regards the cost and charges of £18: 10: 0, for a copy of Arrowsmith's Map of India, forwarded by you per ship "*Persian*," which has been rejected by the Society as incomplete, and in consequence useless for the purpose for which the Map was commissioned from England. You have been already advised, that the Map has been made over to Messrs. Thacker and Co., to be disposed of on your account.

The property in the Journal from No. 133, is now vested in the Society; but you will continue to keep its sale account separate as heretofore, furnishing as usual, your Account Current distinct from that of the Society's other transactions with you; my interest, however ceases from No. 132, and you will therefore render up to that number a separate account to me.

The sum of £32: 17: 0, being for sale proceeds of the Journal up to No. 128, transferred to the Society's general Account Current with you, has been adjusted here at the exchange of 1s. 11d. per Rupee in Co's Rs. 342: 12: 6, the rate of exchange, London on Calcutta, ruling on the 30th June. "I am dear Sirs,

Your faithfully,

Asiatic Society's Rooms, Calcutta,
5th September, 1843.

H. TORRENS,
Vice President and Secy. As. Socy.

Read the following letter from the Secretary to the Bombay Branch of the Royal Asiatic Society:—

To the Secretary to the Asiatic Society of Bengal, Calcutta.

SIR,—By desire of the Bombay Branch of the Royal Asiatic Society, I beg to enclose bill of lading of a case of Geological Specimens addressed to "Curators of the Museum of Economic Geology of India," shipped on board the "*Fuzul Rubany*," Capt. Stewart. I shall forward a list of the Specimens, together with such remarks as may be required, with the duplicate of the bill of lading. Freight has been paid here.

I have the honor to be, Sir,

Your most obedient servant,

Bombay, Asiatic Society's Rooms,
5th August, 1843.

JOHN G. MALCOLMSON,
Secretary B. B. R. A. S.

* Not yet dispatched with reference to this paragraph.

The Curator stated that the box would be landed in the course of the following day.

Read the following extract of a letter from Professor Wilson to the Sub-Secretary, dated 5th May, and brought out by Dr. Sprenger, who being present, was introduced to the Society by the Honorable the President :—

To H. PIDDINGTON, Esq., Secretary, Asiatic Society.

DEAR SIR,—I have requested Dr. Sprenger, who comes out in the Company's Medical Service, to take charge of the following Books for the Society :—

Sama Veda, Text.

Ditto, Translation.

Megha Duta, new edition.

Selections from the Mahabharata.

The two former I send on behalf of the Oriental Text Society, and the Oriental Translation Fund Committee—the two last upon my own. Yours truly,
East India House, 5th May, 1843. H. H. WILSON.

Read the following from Prince Ghulam Mahommed, accompanying a clay bust made by a native artist :—

E. BLYTH, Esq. Curator, Asiatic Society, &c.

SIR,—I beg you will present to the Society, with my best respects, the accompanying Bust of their late President, the Honorable H. T. Prinsep, Esq. as a small token of my esteem of the public worth of the individual whom it represents, and I trust the Society will do me the honor of accepting it as the offering of their most sincere well-wisher.

I remain, Sir,

Russapuglah, 23rd August, 1843.

• Your obedient servant,

GHULAM MOHUMED, PRINCE.

Read the following letter from the Secretary to the Agricultural and Horticultural Society of India :—

H. TORRENS, Esq. Secretary, Asiatic Society.

DEAR SIR,—As I believe, under the present system of publication, there is no objection to an interchange of the Journal of the Asiatic Society with those of other bodies, I beg on behalf of the Committee of Papers to state, that the Agricultural Society will be happy to exchange Journals with your Society. The interchange can commence with the Journals of the respective Societies from the beginning of the current year, should this proposal be acceded to.

I am, dear Sir,

Your's faithfully,

*Agricultural Society's Room,
Town Hall, August 17, 1843.*

JAMES HUME,
Honorary Secretary.

The proposed exchange was agreed upon.

Read the following extract of a letter from Dr. Spilsbury to the Sub-Secretary, relative to the Mammoth Head brought down by Lieutenant Hickey :—

MY DEAR SIR,—I really have been quite horrified at the announcement in the Journal, (No. 136, or 50 N. S.) received last night of the Head from your *zealous contributor*. The history of that Head is as follows, and the Society at present have no more right to it than I have. It was exhumed at Brimhan Ghat, by the late Capt. M. Smith, then in charge of the Saugor district, (vide Journal, vol. viii. for 1839, p. 981 and its foot note.) He carried it to Saugor where I saw it, and where he gave it to me ; I then gave it to Cautley (for comparison, as I had sent a very large one previously to the Society,) and offered to convey it to Agra, which I did, and here all trace was lost for a long time. I could get no answer about it from Dr. Woodburn, the Garrison Surgeon, and it must have lain two years in his compound, not at Kamptee as you state. When H. with his Corps went from Saugor to Agra, I requested him to make enquiries, and let me know, which he did, stating, that it was all safe in W's. compound, of which I informed Cautley, who requested me when opportunity offered to send it to Calcutta, care of Cantor and Co. When H. was leaving Agra for Barrackpore, he asked me if he should take this Head in his boat, and which I gladly availed myself. About this time Cantor's house failed, and there was therefore no use in sending it to them, and it remained with H. pending Cautley's *hookum*. I shall write to Cautley to-morrow, and see what he says. I hope you duly received my remittance of 20th ultimo.

Benares, 15th August, 1843.

Read the following extract of Letter from Lieutenant Hutton :—

MY DEAR SIR,—I have the pleasure to announce the dispatch per Ranghy to your address, of a small packet containing specimens for analysis of the wax or wax-like substance deposited on the leaves of a tree growing above Rajpore, by the larvæ or "*Plata limbata*," an insect closely allied to *F. Nigricornis*, a figure of which you will find in Donovan's Insects of China. The specimens of wax I should feel obliged by your analysing, and adding the results in a note to my remarks. There are likewise two specimens of the perfect insect in a little box which can be added to the Society's Museum after inspection. Can you tell me whether the Society possess any specimens of ores and minerals which they would exchange for any duplicates I may have of Minerals, &c. from Afghanistan and parts of India? Also, whether they have any duplicate insects for exchange? All of course in good condition. I wish much I could furnish you with the localities from which your Himalayan collection sent down by me, was presented; but my memoranda were destroyed during my absence in Afghanistan, and I cannot tell what you have received. Could you tell me what you had received together with the numbering of the specimens, I might perhaps tell, from my geological report and the aid of my own specimens, where yours are from.

I will in a day or two remit you the amount of my subscription, which is due for two or three quarters, I fancy.

Yours very truly,

J. HUTTON,

Mussoorie, 23rd August, 1843

M. A. S.

Read an application from L. Wray, Esq. requesting the Society's patronage of a work now publishing by him, under the title of "The Sugar Planter's Companion." It was considered by most of the members that this subject was so peculiarly within the province of the Agricultural Society's pursuits, that it might be better left wholly to that body.

Read the following letter from Captain Tickell to the Secretary :—

MY DEAR TORRENS,—I have the pleasure to send you a sketch of a curious kind of Tiger, made from a skin obligingly lent me by Lieutenant Biddulph, one of the residents here. The sketch and notes thereon I should wish to have published in the Journal, if they be thought worthy. And when they are done with I beg they may be returned to me, for I have no copy by me for my own collection. I hope this can be managed without trouble. S. R. TICKELL.

Darjeeling, 11th August, 1843.

P.S.—When opportunity offers, I wish you would express my apologies to Mr. Piddington for my not having answered his note, about the skulls of the different tribes in my part of India. It reached me but an hour or two before I started for Darjeeling, and what with sickness and travelling, I have had no opportunity for replying to him. I doubt whether skulls could be procured in Singbhoom, as they are there exceedingly jealous about their dead, and burn the bodies to ashes, bones and all.

A lithographic proof of the drawing, which had been already prepared for the Journal, was exhibited, and as the work of a native artist, its extreme fidelity was much admired.

Read the following extract of Letter from Dr. Campbell, Resident at Darjeeling.

H. PIDDINGTON, Esq. *Secretary, Asiatic Society.*

I have sent you by to-day's Janghy, specimens* of the Rock Salt of Eastern Thibet, which is brought here for sale by the Thibetans through the passes in the snowy range leading into Sikim. I may forward a note of particulars regarding this article at some future time. When purified by solution for recrystallisation, it is snowy white, and far superior for the table to the Indian salt. The price here at present is 5 seers per rupee.

Yours truly,

Darjeeling, 7th August, 1843.

A. CAMPBELL.

Read the following Letter from Capt. Haunington, addressed to the Sub-Secretary :—

H. PIDDINGTON, Esq., *Secretary to the Asiatic Society.*

MY DEAR SIR,—In the Journal of the Asiatic Society, No. 65, for May 1837, there is an article by Mr. H. T. Prinsep, on the mortality among members of the Civil Service. The table prepared by him, is from its extreme accuracy very valuable ; but it would be still more so if brought up to the present time according to the method he has pointed out. It is indeed probable, that the register has been kept up, but I do not know by whom, or where to apply for information respecting it.

I therefore take the liberty to ask your aid in procuring it. I am prosecuting some inquiries of this nature, and the results if worth any thing, would be much at

* No. 1. The red coloured salt.

„ 2. The white crystals found in the former in the proportion of 5 per cent.

„ 3. Bits of minerals found in the salt.

your service for publication in the Journal. If the Table can be obtained, I would put it into such form as would render it available for determining the expectation of life, and the values of annuities.

Knowing your zeal in these matters, I need not apologize for the trouble I am giving you.

Yours very faithfully,

Purulia, 21st August, 1843.

J. HANNINGTON.

The Sub-Secretary stated, that he had already addressed Mr. Charles Prinsep, who had pointed out various sources of probable information; others were suggested by the meeting, and amongst them the Honorable the President mentioned the information procured, and printed by a Committee of which Major Henderson was Secretary, and himself a member, of which the object was to found a Life Assurance Society for the benefit of the Civil Service, which had been printed in the Transactions.

Read the following Letter from B. H. Hodgson, Esq. Resident at Kathmandoo, accompanying a Catalogue of Nepal Birds, &c. :—

MY DEAR SIR,—I hope you have before this got my six boxes of specimens sent by Steamer, care of Messrs. Charrier and Co. Patna, also the tin box sent by Dak a few days ago.

The enclosed exhibits the whole arranged in the modern genera, and is by far the vastest Catalogue yet produced of Indian Birds. I wish Mr. Blyth to compare it with the specimens and then to publish it; after which the *whole* of the specimens and catalogues are to be sent home by my Agents, Colvin and Co., addressed to B. Hodgson, Esq. Longport, Canterbury. I have corrected the catalogue so far as I have time, and deem it sufficiently correct now to appear, but wish Mr. Blyth's prior revision.

Yours very truly,

Nepal, 22nd August, 1843.

B. H. HODGSON.

Read the following Letter and enclosed Reports from Capt. D. Williams, Assistant Commissioner at Arracan :—

MY DEAR SIR,—The Soogree, or Head Revenue Officer on the island of "Reguing" or "Flat Island" has just made a report, of which the enclosed is a translation, that on the 26th, 27th, 28th and 29th of last month, a Volcano broke out in the sea a little distance South of "False Island," and a new island was formed.

On reference to a chart of Arracan, you will see that "False Island" is East of "Flat Island," and the latter is South of "Round Island," whence I obtained the copper ore I lately sent to the Asiatic Society; the group is situated on the S. E. shore of the island of Chedooba. I consider the subject of sufficient interest to report on to the Society, especially as regards its vicinity to the island where the copper ore was found.

Your's truly,

Ramree, August 9, 1843.

D. WILLIAMS.

P.S.—I have sent for specimens of the soil of the new formation.

Translation of a Report from Mungtee of Regwain.

Mungtee, an inhabitant of the Purgunnah of Regwain, represents that on the south of the island of Joyghoyá-cen, which is situated within his jurisdiction, there arose at a

distance of about thirty bamboos a new island, where from the 19th to the 22d Wach-loo,* of the Mughee year 1205, there appeared of a sudden a fire (supernatural fire.) Considering this as a subject of importance, the petitioner brings the same to the notice of Hoזור.

ترجمہ

رنگیوں پرگنہ کاسوکر ی غلام مسے منگتے نے خدانود کا جناب
 علی میں عرض پہونچاتا ہی
 غلام کا علاقہ جی گیوائیں زنجیرہ کا دکھن طرف اندازی ۳۰ تیس
 بانس کا تفاوت میں نیا زنجیرہ ہوکے سنہ ۱۲۰۵ مگھے واپلو
 مہنا کے اونیس ۱۹ تاریخ سے لغایت مہنا مذکور کا بائیس ۲۲
 تاریخ تک ناگانی آگھے اوتھایا ہی اسی واسطے غلام نے اسبات
 اپنا اوپر واجب جانکر کے حضور میں اطلاع کرتا ہوں اسمیں
 خاوند مالک ہیں *
 ترجمہ کیا گوکل چندر داس بندوا محرر نے ملک ہوائیں
 محرر کے ساتھ

It was proposed and carried unanimously, that the Secretary be requested to draw up for the approval of the Society, a representation to Government, setting forth the great scientific and other advantages which might be derived, were a qualified person deputed to examine and report upon the singular and highly interesting phenomena adverted to in Capt. Williams' communication; inasmuch as some account of the Volcano would be most eagerly looked for by the scientific world at home, and its proximity to us would render neglect on the part of the Society most inexcusable, and indeed disgraceful.

The Curator Museum Economic Geology and of the Geological and Mineralogical Department, stated, that ill health for the last month had prevented his drawing up his report; but he begged to read part of it, being a report on a reference from Government relative to a newly discovered Sulphur bed, at Kurachee in Scinde, as follows :—

No. 32 of 1843.

From Captain J. FREEDY, Collector and Magistrate, Kurrachee, to Captain C. J. BROWN, Commissioner in Scinde, Hyderabad.

SIR,—I have the honor to report for your information, that I have discovered an apparently extensive bed or mine of Sulphur in the vicinity of Ghizree Bundur. My

* A certain Mughee month.

	WORKS.	Rs.	Former Price.
Mahābhārata, vol. 1st pages 831, vol. 2d, pages 868, vol. 3rd, pages 859, vol. 4th, pages 1007, royal 4to.	40	48
Large paper do. do.	50	61
Index to the 4 vols. of the Mahabharat complete.	6	0
Harriwansa, 6 3 pages, royal 4to.	5	6
Rāja Tarangini, 440 pages, 4to.	5	20
Large paper, do. do.	8	12
Naishada, 917 pages, 8vo.	6	6
Sausruta, 1st vol. 378 pages, 2d vol. 562 pages, 8vo.	8	8
Fātawā A'lemgiri, 1st vol. 763 pages, 2d vol. 759 pages, 3d vol. 865 pages, 4th vol. 769 pages, 5th vol. 697 pages, 6th vol. 667 pages, royal 4to, per vol.	8	10
Ināya, 2d vol 660 pages, 3rd vol. 682 pages, 4th vol. 937 pages, 4to.	8	10
Khāzānat ul Ilm, 694 pages, 4to.	8	10
Jawāme ul Ilm ul Riāzi, 168 pages, with 17 plates, 4to.	4	4
Anis ul Musharrāhin, 541 pages, 4to.	5	5
Sharāya-ool-Islām, 631 pages, 4to.	8	15
Tibetan Grammar, 256 pages, 4to.	8	8
Tibetan Dictionary, 373 pages. 4to.	10	12
Asiatic Researches, per vol.	10	12
Burnouf Memoir sur deux inscriptions cunéiformes, 4to. 199 pp.	3	0
Burnouf Commentaire sur le Yacna, with notes &c. 2 parts, pp 945.	10	0
Rs. As.			
Burnouf et Lassen, Essai sur le Pali, ou Langue Sacrée de la presqu'île au de la du Gange. Paris, 1826, pages 222, 8vo.	3	0
Elémens de la Grammaire Jaïnouaise, par M. M. Rodriguez et Remusat, Paris, 1825, pages 158, 8vo.	3	0
Ditto ditto Supplément. Paris, 1826, pages 31, 8vo.
Contes Arabes, traduits par J. J. Marcel. Paris, 1835, avec notes, vol. I. pages 484, vol II. pages 496, vol. III. pages 508, 8vo.	3	0
Brosset, Elémens de la Langue Georgienne. Paris 1837, pages 122, 8vo.	5	0
Klaproth, Vocabulaire et Grammaire de la langue Georgienne. Paris, 1827, pages 232, 1st part, 8vo.	4	0
Cronique Georgienne, traduite par M. Brosset, Text and Translation. Paris, 1830, pages 370, 8vo.	3	0
Choix de Fables de Vartan, en Arménien et en Français. Paris, 1825, pages 96, 8vo.	1	8
Elegie sur La Prise D'Edesse, en Arménien. Paris 1828, pages 112, 8vo.	2	0
Chrestomathe Chinoise—Chinese Characters, 1833, pages 183, 4to.	5	0
Meng-Tseu, texte Chinoise, pages 161, 8vo.	3	0
Meng-Tseu, traduction Latine, par S. Julien. Lutetiae Parisiorum, 1824, pages 593, 8vo.	6	0
Lassen, Institutiones Linguae Præcificæ. Bonnæ ad Rhenum, 1837, pages 167, 8vo.	6	0
Lassen, Anthologia Sanscritica. Bonnæ, 1838, pages 371, 8vo.	4	0
Lassen, Gita Govinda, Sanscrit et Latine. Bonnæ ad Rhenum, 1836, pages 180, 4to.	2	8
Chezy, Yajnadattabada, ou Le Mort D'yajnadatta, Text, Analysis and Translation. Paris, 1826, pages 142, 4to.	3	8
Chezy, La reconnaissance de Sacountala, Text and Translation. Paris, 1830, pages 665, 4to.	10	0
Geographie D'Aboulféda, Texte Arabe. Paris, 1837-40, pages 586, 4to.	5	0
The Travels of Ibn Batuta, translated from the Arabic Manuscript, by S. Lea. London 1829, 143 pages, 4to.	6	0
The Travels of Macarius, translated by F. C. Belfour. London, 1829, pt. I. 114 pages, 4to.	4	0
Memoir of the Emperor Jehanguire, translated from the Persian Manuscript, by Major D. Price. London, 1829, 141 pages, 4to.	4	0
History of the Afghans, translated from the Persian, by B. Dorn, part I. London, 1829, 184 pages, 4to.	5	0
Han-Koong-Tseu, or the Sorrows of Han, a Chinese Tragedy, translated by J. F. Davis. London, 1829, 28 pages, 4to.	1	8

JOURNAL

OF THE



ASIATIC SOCIETY.

Tables of Comparative Philology, shewing specimens of the affinity of the Greek, Latin and English Languages, with the Sanskrit, Persian, Russian, Gaelic, Welsh, Lithuanian, German, Hebrew, and Anglo-Saxon. By the Rev. JAMES LONG.

The following Comparative Tables of the Indo-European languages are the result of much labour and research during the last four years. Having myself, when studying the German, Dutch, Italian, Spanish and Portuguese languages, experienced the advantages accruing from giving attention to the affiliation of languages as a guide to the acquisition of them, I hope the same principle may be of use in facilitating among Europeans, a knowledge of the Sanskrit and Persian, and also that natives of India might with greater ease familiarise themselves with the leading European languages. The Bengali and Hindi tongues, as derived chiefly from the Sanskrit, must have a number of words of common origin with the English, which is connected with the Indo-Germanic languages. Steam is now increasing the intercourse between nations very rapidly, and binding the whole human race together as members of one great family, but the diversity of languages is a mighty antagonistic power. Those tables have been compiled with the design of rendering philological studies more interesting, as well as more *scientific*, and of smoothing the way to an acquaintance with different languages so necessary in the present day for religious, literary, and commercial purposes.

The rules I have laid down for my guidance in selecting words for those Comparative Tables, are,

No. 142, NEW SERIES, No. 58.

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1. To insert no word except on the *authority* of standard Philological works, as "Bopp's Vergleichende Grammatik," or Comparative Grammar of the Sanskrit, Greek, Latin, Lithuanian, Slavonian, Gothic and German languages; "Eichhoff's Parallele des langues de l'Europe et de l'Inde;" "Vans Kennedy's Researches into the origin and affinity of the principal languages of Europe and Asia;" "Pritchard's Eastern origin of the Celtic nations;" and many other publications.

2. Those words are considered as *cognate*, which are similar, or nearly similar in sound and meaning. Though sometimes the significations be not precisely the same, yet the difference is only such as might arise from a natural connection of ideas. Thus "the Sanskrit *kúma*, a lake, and *κύμα*, a wave; *stoma* the head and *στομα*, the mouth; *balam*, an army, and *bellum*, war, are clearly identical terms." As no two nations ever had exactly the same alphabetical and grammatical systems, it is evident that words in passing from one into the other, must have undergone some change in their consonants and vowels. Sir W. Jones himself, who was a very cautious Etymologist, has observed: "We know, *a posteriori*, that both *fitz* and *hijo*, by the nature of two several dialects, are derived from *filius*; that *uncle* comes from *avus*: and *stranger* from *extra*; that *jour* is deducible, through the Italian, from *dies*; and *rossignol* from *luscinia*." Etymological studies have been fixed on a firm basis by the Germans, and are conducted on ascertained principles. The great philological law by which modern Etymologists are guided, is, that no permutation of letters is allowed arbitrarily, it must be sanctioned by the usage and genius of the languages compared. Sir I. Newton, by applying the principles of the inductive philosophy to the material world, disclosed the arcana of nature's laws. Cuvier acted on the same system in his researches into Comparative Anatomy; and Bopp has succeeded equally well by grounding his rules for Comparative Philology on the broad basis of groups of languages. Who would suppose at first sight, that *stranger* is connected Etymologically with the Greek *εκ*; here is the inductive process; with *εκ*, *εξ* is cognate, then the Latin *ex*, *extra*, *extraneus*, the old French *estranger*, modern French *etranger*, and English *stranger*. The French *eveque* and English *Bishop* have not one letter the same, yet they are both acknowledged to be derived from the Greek *επισκοπος*.

3. I allow in the tables of those languages being *cognate* which have, in addition to an analogy in grammatical forms, a large number of original words expressive of the most *natural* and *simple* ideas, terms for family relations and the objects of visible nature, and verbal roots of the most frequent occurrence. This excludes all those words which commercial or literary intercourse might introduce.

4. Words, which in their primary signification denoted the properties of objects of sense, are applied to express the analogous mental qualities. Thus the words, a *sanguinary* man and a man of *sanguine* temperament are both derived from *sanguis*, blood. They are sometimes restricted in meaning; thus *rector* in Latin signifies a ruler, but in England it is limited to a clergyman of a certain official dignity, and in Scotland to the head-master of a classical school. *Corps* in Latin, signifies the body, the English words derived from it are—corpse, a dead body; corps—a body of soldiers;—corporation, a municipal body. We use *villain* in the sense of a wicked person, formerly it meant only a villager.

The languages of which I have given *specimens* for comparison in those tables belong to the Indo-European class, and have been spoken in a range of country extending from the Indian Ocean to the Atlantic, and from Ceylon to Iceland. The chief branches, are,

1. The *Persian*, denoted by (P); its primitive form was the Zend, the sacred language of the Magi, adopted by Zoroaster, and spoken by the ancient Persians; the Pehlvi, a cognate tongue, was spoken by the Medes and Parthians. Persian is incorporated very largely into Urdu.

2. The *Hebrew*, denoted by (H); the notion is now exploded that this was the parent language. Its cognates are Arabic, denoted by (A), Syriac, Chaldee and Phenician.

3. The *German*, denoted by (G); the Dutch bears a close affinity with German.

4. The *Gaelic*, denoted by (Ga); it is cognate with the Erse or Irish.

5. The *Welsh*, denoted by (W)

6. The *Cymraig*, denoted by (C); it is cognate with the Welsh, Cornish, and Armoric, and belongs to the Celtic family.

7. The *Russian*, denoted by (R); it differs little from the Slavonic, which is the ecclesiastical language of Russia.

8. The *Lithuanian*, denoted by (Li) ; it is of Slavonian origin, and is still spoken in Courland and Lithuania. The ancient Prussian is a dialect of it.

9. The *Anglo-Saxon*, denoted by (S) ; it was the ancient language of England, and forms the basis of the English tongue.

10. The *Latin*, denoted by (L) ; the French, Spanish, Portuguese, Italian, and part of the English language are derived from it.

11. The *French*, denoted by (F) ; on account of its general spread, language is mentioned here.

12. The *Gothic*, denoted by (Go). This language was in constant use for probably 1500 years, as the tongue of the rude and widely dispersed tribes that inhabited Thrace and Germany.

13. The *Arabic* denoted by (A) ; few words are inserted, as many were the same as the Persian.

14. The *Greek*, expressed by its own character.

15. The *English* known by being printed in Italics.

16. The *Sanskrit*.

No word is inserted in those tables which is not cognate with the Sanskrit, which is used as the common centre for all ; hence many words, which are cognate with the Sanskrit, but not with either the Latin, Greek or English, are omitted. The field is wide, every year will add to the discoveries and improvements made in the science of Comparative Philology. The old system of etymological investigation, which limited the field of observation to one or two languages, is now abandoned. The discovery of the Sanskrit language has quite altered the mode and form of etymological researches. These tables collect in *alphabetical* order, (so as to facilitate reference,) what is scattered in *many scarce* and *expensive* works. I hope they may tend to make philological studies an exercise of the reasoning powers, and not a mere effort of memory. Comparative Philology might form a useful branch of study in seminaries of learning. It serves to produce a deep impression on the mind in favour of the great truth,—that mankind were originally one. The figures appended to some words indicate the number of words of similar origin in the same language ; the third column gives the meaning of the Sanskrit.

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Αἰτία 25,	Hetu 6,	cause,	<i>Li.</i> ozys, <i>L.</i> agnus.
Αἶξ 6,	Aja,	goat,	<i>L.</i> libo, <i>Li.</i> limpu, <i>L.</i> limus, <i>G.</i> leim, <i>R.</i> lipnur.
Αλεῖφω 40,	Lip 27,	anoint,	<i>L.</i> argentum, <i>argent.</i>
Αργυρος 32,	Rajata 10,	silver,	<i>Ga.</i> athair, <i>W.</i> awyr, <i>G.</i> heitre <i>L.</i> æther, <i>ethereal</i>
Αἶθηρ 40,	A'shtra 14,	the sky,	<i>L.</i> ambo, <i>Li.</i> abba, <i>Go.</i> bai, <i>G.</i> beide, <i>R.</i> oba.
Αμφω 9,	Ubha 11,	both,	<i>P.</i> gillah.
Αγέλη 11,	Kul 76,	herd,	<i>G.</i> ach, <i>C.</i> och, <i>ache.</i>
Αχος 11,	Aka,	pain,	<i>L.</i> omnis, <i>Ga.</i> an, <i>C.</i> a. <i>omniscience.</i>
Αμα 2,	Amá 6,	together,	
Αναπιδον,	Anupadam,	on the foot,	
Ανεμος 31,	An 4,	breath,	<i>Go.</i> ana, <i>W.</i> enyz, <i>L.</i> animus, <i>Ga.</i> anain, <i>animal.</i>
Ανευ 4,	An 217,	without,	<i>L.</i> in, <i>Go.</i> un, <i>inactive.</i>
Αννηρ 78,	Nar 29,	man,	<i>Ce.</i> nér, <i>P.</i> nar, <i>Ga.</i> anear.
Αγχι 13,	Anke 2,	near,	<i>L.</i> angustus, <i>G.</i> enge, <i>Li.</i> anksztas, <i>R.</i> uzki, <i>C.</i> agos.
Αω 18,	Vá 65,	blow as wind,	<i>G.</i> wehe, <i>Li.</i> weju.
Αυδη 20,	Vad 33,	to speak,	<i>Li.</i> wadinu, <i>L.</i> andió, <i>audible.</i>
Αρειω 145,	Hri 7,	take,	<i>H.</i> áráh, <i>L.</i> haurio, <i>Ga.</i> airde, <i>heresy.</i>
Αδια 15,	Adhi 80,	superiority,	<i>αδην,</i> <i>Ga.</i> adh, <i>W.</i> at.
Αρωμα, 5, spice,	A'ráma,	garden,	<i>Aromatic.</i>
Αργον 21,	Arjun 2,	white,	<i>Argent.</i>
Αριστος, noblest,	Arishta 7,	happiness,	<i>Aristocracy.</i>
Αλις 12,	Alam 2,	enough,	<i>L.</i> alo, <i>Go.</i> alia, <i>ολος,</i> <i>all,</i> <i>G.</i> alle, <i>W.</i> oll.

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Αισω 27,	Asa 39,	move,	
Αιδω 33,	A'drita 2,	respected,	
Αραβος 5,	A'ráv,	sound,	
Αρουρα 28,	Urvará 3,	fertile soil,	<i>L. arvum, A. ardhi, arable, Ga. ar.</i>
Αυγη 47,	Achha,	transparent,	<i>Li. aszkus.</i>
Ακανθη 32,	Kantak 22,	a thorn,	<i>L. acanthus.</i>
Ανω,	Nu 6,	praise,	<i>Ga. ain.</i>
Αξιω,	Yách,	request,	<i>Axiom.</i>
Απο,	Apa 304,	from, without,	<i>L. ab, Go. ab, Li. ap, G. auf, off, R. ob, Ga. o.</i>
Αρι,	Uru 29,	much,	<i>Go. airiza, G. ehre, Ga. air, C. ar.</i>
Αρησ,	Ari 13,	enemy,	<i>Ga. ar, W. aer.</i>
Ασθενεια 33,	Asustha,	unwell,	
Αυξεν 35,	Uchh,	conglomerate,	<i>L. augeo, Li. augu, L. ex, G. hoch, ξξω, W. uch.</i>
Ατμη 13,	A'tmá 68,	wind,	<i>Go. ahma, G. athem, atmosphere.</i>
Αστρον 17,	Táran,	star,	<i>P. sitára, L. astrum, Go. stairno, G. stern.</i>
Αλεα, warmth,	Ul 1,	to burn,	<i>L. vulcanus, volcano.</i>
Απρος, complete,	Vrittas 20,	performed, [ing, G. werth, Li. wertas, worth.	
Αδινον, excessive,	Sáadhanam 8,	exhaust, complet-	
Αγος, crime,	A'gas, ..	sin,	
Απτον, nearer,	Ata,	move to,	<i>L. ad, F. ad, Go. ad, C. at, Ga. eath, R. do.</i>
Ανα,	Anu,	near to,	<i>Go. ana, Li. na. Ga. ann, G. an, one, R. na.</i>
Ακρον,	Agra,	summit,	<i>akrospire.</i>

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Ἀρκτος, Ἀρχι, Ἀγῶ, Ἀνία, <i>trouble</i> , Ἀγερῶ, Ἀρδῶ, Ἀδῶ,	Riksha, Arha, Acha, anch, Anaya, A'graha 3, Ardra 13, I'dá,	a bear, worthy, honor, distress, seizing, moist, praise,	<i>L. ursus, arctic, Ga. art, Wa. aerth.</i> <i>Arch, G. erz.</i> <i>Go. ahia, G. achte, ἀγαθος, Ga. agh.</i> <i>Annoy, F. annoyer, H. ánah.</i> <i>L. grego, H. ágar, exaggerate.</i> <i>Ode.</i>
Βαλλῶ 327, Βρωσις, <i>food</i> , 18, Βαρὼν 28, Βίος 74, Βαγμα, Βησῶ 280,	Pil 2, Bhriti 10, Bhára 13, Bhab 33, Vagmin 1, Vesh 10,	throw, nourishment, heavy, existing, speaking, entrance,	<i>L. pello, Li. pillu, G. bolzen, bolt.</i> <i>βρτ.</i> <i>Barometer.</i> <i>φνη, Ga. bo, W. byw, biography.</i> <i>R. bain, βοαω, Ga. baigh.</i>
Γαμβρος, Γη 43, Γηρως 25, Γαυρον 11, Γενναῶ 226, Γερων 26, Γευσις,	Iámátri, Go 14, Guru, Garva 9, Jan 95, Jírna 28, Ghas 6,	[band, daughter's hus- the earth, venerable, pride, born, old, food,	<i>L. gener, L. geno.</i> <i>Go. gawi, G. gau, Ga. ce, geography.</i> <i>L. grandis.</i> <i>W. cawr, Go. gaur.</i> <i>L. gigno, Go. ginna, genius, oxygen.</i> <i>G. greise, C. grai.</i> <i>Go. kausia, L. gusto, G. koste, R. ruszain, gustation.</i>

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Γοαυ,	Ghu,	sound,	<i>L. gemo, Go. gauno, γεμω.</i>
Γναθος,	Ganda 11,	jaw,	<i>L. gena, Li. zendas, F. joue.</i>
Γυνη,	Jani,	mother,	<i>R. zena, C. cena, Go. quens, kin, Ga. gein, zen.</i>
Δεω, deficient,	Dí 5,	waste,	[<i>F. tire.</i> <i>Τερω, L. tero, G. zehre, C. torni, R. deru, Go. taira,</i> <i>G. zweite, δευτερος, δαιζω, R. dwoin.</i>
Δερω, flay,	Dri,	tear,	
Δαιω 38,	Dáh 17,	divide,	<i>L. domo, Ga. duine, C. dyn, G. zahme.</i>
Δαμαω 44,	Dam 12,	tame,	<i>G. zeigen, L. doces, Go. teiha, G. zeige, teach.</i>
Δειζω 62,	Dish 20,	exhibit,	<i>Ga. deare, W. drem, Li. dyru.</i>
Δερκομαι 26,	Drish 37,	see,	<i>R. dlia, Ga. dlu, Li. del, W. deu.</i>
Δια,	Dhi,	move,	<i>P. daden, Ga. daigh, Li. dumi, L. dos.</i>
Διδωμι 135,	Dadámi,	give,	<i>θλαω, deál, C. tyllu, Li. dallyiu.</i>
Διελων,	Dal 25,	cut,	<i>Go. twai, Li. dwi, Ga. da, C. dau, R. dwai, G. zwei.</i>
Δνω 18,	Dwi 126,	two,	<i>G. zehn, Ga. deich, C. deg, Go. taihun, P. deh.</i>
Δεκα 32,	Dashan 32,	ten,	<i>Go. tahia, G. zacke, tack.</i>
Δακνω 45,	Dash 10,	bite,	<i>W. deegryn, Go. tagr, G. zahie, P. ter, S. ter.</i>
Δακρυ 36,	Asru 3,	a tear,	<i>P. andám.</i>
Δεμας 19,	Dehin 19,	corporeal,	<i>L. domus, G. dom, R. dom, dome.</i>
Δονειω 12,	Dhun 10,	shake,	<i>C. dir, Go. tus, δυη, δυαω.</i>
Δωμα 62,	Dháman,	house,	
Δυς,	Dus 130,	bad,	
Δανρ,	Devri, devara,	husband's brother,	<i>I. levir, Li. déwéris, R. diever.</i>

GREEK.	SANSKRIT.	MEANING.	COGNATE
Δραω, <i>actō</i>	Dru,	runaway,	<i>Li.</i> darau, <i>Ga.</i> drabh.
Δρυς, 26,	Dru,	a tree,	<i>Druid.</i> <i>W.</i> derw, <i>Ga.</i> dai
Δρυμα,	Charma 37,	eather,	<i>P.</i> cha.
Δισμα,	Dāma 4,	rope,	
Δακτυλος;	Deshinī 1,	fore-finger	<i>L.</i> digitus <i>G.</i> zebe, <i>doigt.</i>
Δανυαι,	Dhyai,	meditate,	θεω, <i>G.</i> enke, <i>Li.</i> ngain
Δνω, <i>entei</i>	Du,	move,	<i>L.</i> duo, <i>endue.</i>
Δφ	Dr p,	rain,	δρυντω, <i>G.</i> treffen, <i>drobli</i> <i>Ga.</i> ip
Εξ, 26	Eka 122,	one,	<i>G.</i> ein, <i>Li.</i> weenas, <i>R.</i> odin, <i>Ga.</i> aon, <i>C.</i> un, <i>Go.</i> [ε — <i>P.</i> yik.
Εξ, 14	Shash 11,	six,	<i>L.</i> sex, <i>P.</i> shasu, <i>G.</i> sechs, <i>Li.</i> zeszi, <i>R.</i> cat.
Επτα, 13,	Saptan 20,	seven	<i>P.</i> halt, <i>G.</i> sieben, <i>R.</i> sedn <i>Ga.</i> seachd, <i>W.</i> saih.
Εννεα, 10,	Ni van,	nine	<i>G.</i> neun, <i>R.</i> dewial, <i>Ga.</i> n <i>Go.</i> nian, <i>Li.</i> dewynj
Ερχομαι, 56,	Rich 2,	go,	<i>G.</i> reichen, <i>Ga.</i> ru'g.
Ερμον, 14,	Aranya,	a de	<i>G.</i> armer <i>urms,</i> <i>P.</i> aramid, <i>hermit.</i>
Εδω, 23,	Admi,	eat,	<i>Li.</i> edmi, <i>Ga.</i> ith, <i>C.</i> e; u, <i>L.</i> edo.
Ειδω, 65,	Vida 109,	know	<i>Li.</i> das, <i>W.</i> wyd]
Εστι, 63,	Asti,	is,	<i>Li.</i> , <i>P.</i> ast, <i>Ga.</i> ta, <i>R.</i> est, <i>G.</i> ist, <i>L.</i> est.
Εκατος, 6,	Ekaki,	alone	<i>Ga.</i> ich.
Εκατερος, 7,	Ekataras,	either	
Ελασσων, 9,	Lesh 5,	little	
Επαινω, 50,	Pana, 5,	prais	
			<i>Los</i>
			<i>Ga</i>

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Ἐρι,	Urí,	great,	Go. air, C. ar, Ga. awr.
Ἐρις, 21,	Ari,	enemy,	
Ἐρεος, 22,	Itara 4,	other,	<i>heterodox</i> , L. uter.
Ἐλαχιστος,	Lagheshtha,	light,	L. levis. G. leicht, L. lengwas, R. legkü, F. leger.
Ἐχειν, 302,	I'sh,	possess,	Go. aigh, G. eigen, <i>owe</i> , Li. jegui.
Ἐυρος, 9,	Urí 11,	great,	Li. erdwas, G. ur.
Ἐλκος, 11,	Ulká 1,	flame,	L. ulcus, <i>ulcerate</i> .
Ἐντερον, 16,	Antra 54,	entrail,	L. antrum, Ga. eadar.
Ἐν, 5,	Su 365,	good,	C. hy, <i>eulogy</i> .
Ἐζω, 93,	A'sana 2,	seat,	L. sedeo, <i>session</i> .
Ἐρα, 9,	Írá 4,	the earth,	Go. airtha, G. erde, C. ard.
Ἐριον, 14,	U'rná 6,	wool,	
Ἐμβρυον, 7,	Bhrúna 4,	fetus,	<i>Embryo</i> .
Ἐσπερος,	Váspa 2,	vapor,	<i>Vespers</i> .
Ἐγειρω,	Jágrita 10,	awake,	εθωσ, <i>ethics, etymology</i> .
Ἐτεον,	Satyam 69,	reality,	L. item, Go. ith, Li. ír, Ga. ath.
Ἐτι,	Iti 5,	thus,	Go. jabai, G. ob.
Ἐπει,	Api 1,	if,	L. ensis.
Ἐγχος,	Shanku,	javelin,	L. ico.
Ἐκω,	Iksh,	go,	Ga. fear, W. gwor.
Ἐρω,	Bar 10,	chose,	G. werk, <i>work</i> , L. urgeo, <i>energy</i> , Go. waurkia.
Ἐργον,	U'rja 5,	effort,	

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Επι,	Api 4,	before,	<i>L. ob, Go. bi, G. bei, Li. pi.</i>
Ζωω,	Jíva,	life,	<i>Li. gyvas, P. ziad, R. ziwoe, zoology.</i>
Ζυγος,	Yuj,	join,	<i>L. jugum, G. joch, R. igo, Ga. ceangal, C. jau.</i>
Ηρωε, 8,	Shúra,	hero,	<i>heroïne.</i>
Ησυχια, 10,	A'saka,	sitting,	<i>Ga. asaidh, W. eiste.</i>
Ηλιος, 34,	Heli,	sun,	<i>W. haul, Li. el, L. sol, heliocentric, R. solnete, [aphelion.</i>
Ηως,	Ushas 42,	day-break,	<i>G. ost, east, L. aurora, avpa.</i>
Ημισυ,	Sámi 3,	half,	<i>Semi-circle.</i>
Ηλον,	Kílám 6,	pin,	
Θρηνηω,	Dhran 3,	sound,	<i>G. dröhne, drone.</i>
Θεω,	Dhú 10,	shake,	
Θυμοε, 28,	Dhúmas 28,	smoke,	<i>Li. duma, θυος, L. fumus, G. dampf, R. dym.</i>
Θηγω, 16,	Tij 2,	sharpen,	<i>P. tizad, Go. tekan, Li. tikumas. [dwor, C. drys.</i>
Θυρα, 39,	Dwára 17,	door,	<i>Ga. dorus, G. thür, P. dar, Li. dvaras, W. dór R.</i>
Θαρρω, 42,	Dharsha 11,	pride,	<i>Li. drasa, tʃust, R. derzost, dare</i>
Οης, 6,	Dása 11,	servant,	
Θερος,	Trish 11,	thirst,	
Θλαω,	Dalita 25,	divided,	<i>G. theile, deal, R. dolia, F. taille, C. tyllus.</i>
Θυσια,	Tud 30,	kill,	

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Θεω,	Dhatu 20,	basis,	
Θουρος,	Tur 19,	speed,	Go. deds, <i>deed</i> .
Θαλλω,	Dala 12,	leaf,	
Θηλεία	Dhayá,	little girl,	Go. thiwi, <i>R. diewa</i> .
Θανατος,	Hantá 3,	Kill,	θενω.
Ιχωρ,	Uksh 3,	sprinkle,	
Ιαλλο,	Il,	go,	<i>Ichorous</i> .
Ιαων,	Yavana,	Greek,	G ^c eile.
Ιος, 8,	Visha, 2,	poison,	<i>Ionía</i> .
Ιστημι, 350,	Stha,	stand,	<i>L. virus, virulence</i> .
Ισχος,	I'shitá 10,	power,	<i>L. sto, Ga. stad, W. eistedh, P. istad, R. stoju.</i>
			<i>G. stehen, eigner, εχω, Li. jagin.</i>
Κλεω,	Shál,	praise,	<i>L. claro, κολακεια, F. clair, clear, G. klar.</i>
Κογχη, 12,	Shankha 6,	sheH,	<i>L. concha, conch, F. conque.</i>
Κενος, 17,	Shúnya 1,	empty,	<i>G. kein.</i>
Καλον, 44,	Kalya 14,	healthy,	<i>Caligraphy.</i>
Κασσιτερον, 2,	Kastíram,	tin,	<i>Cassiterides.</i>
Κυν, 31,	Shwan 4,	dog,	<i>W. cún, canine, L. canis, Ga. cu, F. chien.</i>
Κατ,	Cha,	and,	<i>L. que, R. gosga, S. clypian, G a ces.</i>
Καλεω, 100,	Kal 20,	to sound,	<i>G. halle, κολωος, L. clamo, call.</i>
Καλυμμα, 60,	Kúl,	cover,	

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Κελευω, 37,	Kil,	order,	<i>Chuckle</i> , <i>L. cachinnor</i> , <i>G. kichele</i> , <i>R. chikaiu</i> .
Καγχαζω, 10,	Káku,	laugh,	<i>L. caput</i> , <i>Ga. cean</i> , <i>G. kopfe</i> .
Κεφαλη, 64,	Kapála 12,	skull,	<i>L. clades</i> , <i>R. klui</i> .
Κλαω, 33,	Klish 5,	afflict,	<i>G. kerl</i> , <i>Li. karalus</i> .
Κυριοσ, 27,	Guru 33,	master,	<i>L. claudio</i> , <i>Go. halts</i> , <i>G. halt</i> , <i>χωλος</i> .
Κολλος, 42,	Khol 7,	lame,	<i>L. clavis</i> , <i>χαλινος</i> , <i>L. celo</i> , <i>G. hehlen</i> , <i>Ga. ceil</i> .
Κλειω, 52,	Kúl,	enclose,	<i>Crypt</i> .
Κρυπτω, 30,	Gup 35,	hide,	
Κακος,	Kachchara,	vile,	
Καμπτος,	Kampitas 7,	quivering.	
Κωμα,	Sham 12,	repose,	<i>L. comis</i> , <i>comatose</i> .
Κραζω,	Krush,	sound,	<i>Cron. L. crocio</i> . <i>G. krähe</i> . <i>Li. krokin</i> .
Κλυδων,	Klid 2,	damp,	
Κειρω,	Chiri 2,	wound,	<i>L. corium</i> , <i>crush</i> , <i>L. crucio</i> , <i>G. kratze</i> .
Κτισι,	Kshiti 15,	abode,	<i>Ga. cai</i> .
Καμνω,	Ksham 5,	endure,	
Κιλλος,	Khara,	ass,	
Κηβος,	Kapi 23,	ape,	<i>L. cephus</i> .
Κοραξ,	Karata,	crow,	<i>L. corvus</i> , <i>G. krähe</i> .
Κις,	Kita 6,	insect,	
Κολεος,	Shalka 3,	rind,	<i>G. hülle</i> , <i>schale</i> , <i>hulk</i> , <i>shell</i> .

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Κεαζω,	Kaṣh 4,	hurt,	<i>Li.</i> kassau, <i>R.</i> koszu.
Κυκλος,	Kosha 20,	globe,	<i>H.</i> gálal, κυλω, <i>cycle.</i>
Κωμος,	Káma,	love,	<i>Comedy.</i>
Κωκυω,	Shoak 20,	grief,	<i>Li.</i> száukin, <i>G.</i> quack, <i>R.</i> kokuui.
Κλυω,	Shru 28,	hear,	<i>R.</i> sluch, <i>Ga.</i> cluinn.
Καρχαρον,	Karkara 4,	hard,	χαρασσω, <i>character.</i>
Κηλειω,	Kil 2,	play,	χαλω. <i>Ga.</i> cal.
Κυρος,	Kuḍi 8,	curve,	στυρος.
Καλια, nest,	Kuláya 5,	nest,	
Κρεας,	Kravya 5,	flesh,	<i>L.</i> caro, <i>carnal</i> , <i>F.</i> carnaval.
Κρυερον,	Krúra 14,	cruel,	<i>F.</i> cruel, <i>L.</i> crudelis, <i>cruelty.</i>
Κηδος,	Kheda 10,	sorrow,	
Ληις 30,	Luth 2,	rob,	<i>L.</i> læsio, <i>G.</i> leid.
Λυω 84,	Lí 2,	liquefy,	<i>Li.</i> leju, <i>C.</i> llaith, <i>G.</i> lauge, <i>R.</i> lüanie.
Λεγω,	Lók 3,	speak,	<i>L.</i> loquor, <i>Go.</i> lahia, <i>G.</i> lache, <i>R.</i> likuiu.
Λαβω 167,	Labh 21,	take,	<i>L.</i> libro, <i>leave.</i>
Λαω 10,	Loch 5,	see,	<i>L.</i> lucas, <i>look</i> , <i>G.</i> leuchte. [imlich, <i>R.</i> lizanie.
Λειχω 17,	Lih 6,	lick,	<i>L.</i> lingo, <i>H.</i> loá, <i>Li.</i> lezu, <i>P.</i> lazad, <i>G.</i> ligh, <i>Ga.</i>
Λυχυος, 13,	Lok 6,	shine.	<i>L.</i> lucerna. <i>W.</i> lluch. <i>Ga.</i> loiche. <i>S.</i> leohd ;
Λαχω,	Lagh 2,	obtain,	<i>L.</i> lego, <i>Go.</i> laika, <i>R.</i> leczu, <i>Li.</i> laigau.
Λιθος	Loshṭa 7,	clod,	<i>Lithographie.</i>

GREEK.	SANSKR.	MEANING.	COGNATES.
Λωβη, Λυπειω,	Lup 20, Lup,	cut, vex.	R. lupliu, <i>Li</i> . luppu, <i>lop</i> , λεπρος.
Μεθυ 17, Μητις 30, Μαραγδον 4, Μελαθρον 2, Μαστακα 18, Μεγαρον, Μελαν 26, Μυχου 7, Μαργον 18, Μαθητης 52, Μαντις 65, Μαρινω 11, Μεγα 25, Μη 16, Μενος 14,	Madhu 38, Mati 8, Marakata 1 Malina, Mastaka 1, Mahá griha Malina 24, Mukha 36, Múrkha 9, Matha, Mantri 26, Marana 2, Mahán 239 Má 1, Manas 50,	intoxication. intellect, emerald, dirty, head, great house, dirty, entrance, foolish, school, a sage, dying, great, not, mind,	[<i>R. med</i> <i>W.</i> méth, <i>G.</i> meth, <i>P.</i> mai, <i>C. medd</i> , <i>mede</i> , <i>μαα</i> , <i>L.</i> mens, <i>Go.</i> munds, <i>mind</i> , <i>G.</i> muth. • μασταζ, <i>masticate</i> . [<i>melia</i> . <i>L.</i> malum, <i>G.</i> maal, <i>mole</i> , <i>R.</i> malewain, <i>moil</i> , <i>Go.</i> <i>G.</i> mund, <i>Go.</i> meuths, <i>mouth</i> , <i>μυτις</i> . <i>L.</i> mor <i>Mathematics</i> . <i>L.</i> marcor, <i>G.</i> morde, <i>R.</i> moriu, <i>murder</i> . <i>W.</i> mawr, <i>Ga.</i> mór, <i>G.</i> mauch, <i>Li</i> . macnus, <i>P.</i> mah. <i>Ga.</i> ni. <i>G.</i> meinung, <i>Li</i> . mir <i>R.</i> mniu, <i>C.</i> mynnu, <i>mean</i> . <i>P.</i> mader. <i>Ga.</i> mathair, <i>G.</i> mutter, <i>C.</i> maw, <i>μαα</i> , ma <i>λ.</i> mysgu, <i>P.</i> amizad, <i>R.</i> mieszanie.
Μητηρ 42, Μισγω 70, Μενεαινω 27,	Mátri 23, Misra 75, Mánva,	mother, mix, respectable,	[<i>R.</i> mater.

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Μηρομαι 88,	Mná,	remember,	<i>Ga smuain.</i>
Μωρον 11,	Múr,	fainting,	
Μογεω 8,	Mogh,	move,	<i>L. machinor, G. mache, make.</i>
Μαω 21,	Moha,	sensuality,	
Μελας 26,	Mala 17,	dirt,	<i>Melancholy.</i>
Μετρον,	Miti 10,	measure,	<i>Go. mita, Li. mettoia.</i>
Μυω,	Mú 3,	tie,	<i>L. Mutus, mute.</i>
Μισεω,	Mish 2,	envy,	<i>Misanthropy.</i>
Μετα,	Mith,	unite,	<i>Go. mith, G. mit, R. mez, mid, S. mid.</i>
Μαγεια,	Máya 15,	delusion,	<i>L. magicus, magician.</i>
Μηκαζω,	Mish 1,	sound,	<i>Li. mikenu, μυθος.</i>
Μαργαω,	Múrchhán,	fainting,	<i>L. moria.</i>
Μηδος,	Medh,	understand,	<i>G. muth, Li. mislis, mood, R. mysl.</i>
Μερος,	Marman 7,	joint,	<i>L. membrum, μοιρα, R. miera, Li. mora.</i>
Μαζα,	Mánsa 14,	flesh,	<i>Go. mes, G. mett, C. maeth, Li. miesa.</i>
Μωρος,	Muhira 2,	fool,	<i>L. moria.</i>
Μαρνω,	Mrina,	injure,	
			[C. nawf, P. nau.
Ναυς 40,	Náu 7,	ship,	<i>Go. nota, nautical, L. nauta, Ga. navi, G. nachen,</i>
Νομος 53,	Nema 45,	precept,	<i>Astronomy, F. nomade.</i> [G. neu, F. neuf.
Νεος 66,	Nava 33,	new,	<i>L. novus, W. newydh, Ga. nus, P. nau, R. nowyi,</i>
Νεφελη 25,	Nabhas 28,	cloud,	<i>W. nivwl, Ga. neamh, G. nebel, L. nébula, R. nebo.</i>

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Νύξ,	Nishá 28,	night,	L. nox, G. nacht, R. noez, Ga. nochd, C. nos.
Νεῖαρος,	Nichai 5,	below,	G. nieder, R. nizkü.
Νευρον,	Snasá,	nerve,	G. snyr, L. nervum, R. sner.
Νυος,	Snusá,	daughter-in-law,	L. nurus.
Νεετα,	Nay 12,	lead,	L. nuo, Go. neiwa, G. neige, R. nesu.
Νηρος,	Nír 10,	water,	Nereids.
Ξίφος, 12,	Kshi 15,	wound,	A. seif, H. tsává.
Ξυρω, 82,	Kshúr 11,	razor,	Li. skirren, <i>shear</i> , G. schere.
Οκτω 10,	Ashtrin 24,	eight,	G. achte, P. hesht, L. octo, R. osm, C. wyth, R. vo-
Ομυχλη 2,	Megh 38,	cloud,	Li. migla, ομυχλεω, R. mglá, P. migh
Οδυνη 34,	A'dínay,	pain,	<i>Anodyne</i> . [R. samyi.
Ομοι 41,	Sam,	similar,	Go. sama. <i>homologate</i> , G. samt, <i>same</i> , L. similis, αμα,
Ολον 14,	A'lám,	extensive,	W. oll, Ga. aile, all, G. all, Go. ols.
Οιτον 2,	Ití,	calamity,	
Ονομα 76,	Nám 8,	name,	Go. namo, W. enu, Ga. ainm, P. nam. G. name.
Οστειον 16,	Asthi 21,	bone,	L. os. <i>osteology</i>
Οφρυς 22,	Bhrú 8,	eye-brow,	G. braue, P. abru, R. browi.
Ορη 30,	U'rmi 4,	current,	
Οικος 172,	Oka 3,	house,	[wes.
Ομιλος 20,	Mila 10,	meeting,	Li. ukis, <i>parochial</i> , G. wick, L. vicus, Go. weih's, R. <i>Homily</i> .

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Ομβρος, • Ουσια, Ορω, Ορος, Οσομαι, Οιδω, Οιφω, Οδοι, Οιεται,	Ambhas, 12, Vasu, 30, Ri, Vṛish, 14, I'kshu, 4, Edh, Yabh, Adhwan, 5, U'hate, 4,	water, substance, approach, sprinkle, see, increase, copulate, road, infer,	<i>L. imber.</i> <i>G. wesen, Go. wisan, R. weszcz.</i> <i>Ĺ. orior, ορθος, oriental, H. ar.</i> <i>ερση, L. urino.</i> <i>Optics.</i>
			<i>Period.</i>
Πεταλον, Πεντε, 26, Προ, Πολυν, 77, Παρος, 5, Πρηθω, 30, Πλουω, 88, Πεσσω, 7, Περων, 65, Πονος, 104, Περαω, 66, Παγη, 117,	Patra, 44, Panchan, 100, Pra, 957, Pura, 13, Puras, 37, Prush, 3, Pláv, Pachati, 13, Patrin, 44, Pana, 18, Pára, Pásha, 13,	leaf, five, before city, before, burn, submerge, bake, winged, business, get over, noose,	<i>Go. fimf, Li. penki, R. piat, G. fünf, P. penj, W.</i> <i>Go. faura, Li. pra, G. vor, L. prius.</i> • <i>G. burgh, Li. pillis, Ga. baile, πυργος, metropolis.</i> <i>L. præ, G. vor, fore.</i> <i>P. afruzad, L. buro, fire.</i> <i>L. lavo, R. plavaiu.</i> <i>P. pazad, G. backe, R. peczenie.</i> <i>L. penna, feather, R. ptica, G. feder.</i> <i>L. pensum, ποτεω.</i> <i>L. perio, G. fahre, fare, Li. puru.</i> <i>L. pages, G. fasse, R. pazu, fasten.</i>

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Πιον,	Pina, 3,	fat,	
Πραυς 17,	Prasanna,	pleasing,	Go. friathwa, G. freund, Li. prietelus.
Περυς 3,	Parut, 1,	last year,	Go. fairnis.
Πουρανς 7,	Pradhán,	superior,	
Περρον 16,	Prastar,	rock,	<i>Petrify.</i>
Παλλαξ 5,	Bháláka, 29,	girl,	
Πους 190,	Pada, 34,	move,	Li. pedas, Go. fatus, G. fuss, foot, W. pèd.
Παιδευω 71,	Upadesha, 10,	instruction,	<i>Pedagogue.</i>
Παω 12,	Pá,	nourish,	
Παρασσω 13,	Pat,	fall,	πιετω, R. padaiu.
Πιω 105,	Pá,	drink,	L. poto, bibo, R. pitie.
Περι,	Pari, 350,	round,	Li. pri, Go. fair, L. per, R. pri.
Πιτω 113,	Pat, 13,	fall,	
Προς,	Prati, 255,	to,	L. pro, Go. faur, Li. pro, G. fir.
Πρωτος,	Prathama, 9,	first,	Li. pirmas, L. pristinus, R. peruyi.
Πωλος,	Phal,	fruit,	L. pullus, Go. fula, G. füllen, foal, L. filius.
Παρα,	Pára, 190,	surpassing,	Go. fair, Li. par, L. pro, R. pra.
Πυρ 106,	Prush, 2,	burn,	L. buro, G. feuet, R. pariu.
Πλεω,	Plu,	swim,	L. fluo, Li. plaukin.
Παππος,	Papu,	protector,	L. pappus, H. abba, <i>pappa.</i>
Παχυς,	Bahusas, 82,	great,	L. pinguis, R. puczu.
Πησσω,	Pash, 2,	blind,	Li. paszau, L. positus, pango, G. fang.

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Πορω,	Πύρ, 22,	fill,	Go. fairra, <i>L.</i> porro.
Πλατεια,	Prithu, 6,	large,	G. breite, <i>Li.</i> plotis, <i>Go.</i> braids.
Πρασσω,	Prich, 4,	touch,	<i>Practice.</i>
Πολειω,	Pal, 20,	move,	<i>Pole.</i>
Πολυ,	Pal, 14,	great,	• <i>Go.</i> fulla, <i>G.</i> voll. <i>full</i> , <i>L.</i> pleo, <i>R.</i> polniu.
Πυθων,	Budh,	knowledge,	<i>L.</i> puto, <i>Li.</i> bundu, <i>R.</i> bdiu.
Πυργος,	Purí, 12,	town,	• <i>G.</i> bürg, <i>Go.</i> baurgs, <i>C.</i> brig, <i>F.</i> bourg.
Πρεσβυς,	Prabhú,	chief,	<i>Presbyter.</i>
Πρω, depart, 137,	Ri, 3,	move,	<i>L.</i> ruo, <i>Go.</i> runs, <i>run</i> , <i>pooc</i> , <i>R.</i> rieiú.
Πηρος 86,	Ráadhaná, 2,	speech,	<i>Go.</i> rodia, <i>C.</i> reithio, <i>G.</i> redner, <i>R.</i> ritor, <i>L.</i> rhetor.
Ποίζος,	Rása, 6,	sound,	<i>L.</i> rugio, <i>Go.</i> rukia, <i>G.</i> rausche, <i>R.</i> ryczu.
Πησσω 94,	Rish, 12,	separate,	<i>Li.</i> rézas, <i>G.</i> reisse, <i>L.</i> rosio. <i>R.</i> riez.
Πέζω,	Rádh, 8,	accomplish,	<i>G.</i> rath. <i>Li.</i> redau.
Ποιβδος,	Rav, 2,	soupd,	<i>Go.</i> ropia, <i>G.</i> rufe, <i>R.</i> rewu.
Πηγος,	Rikh, 1,	fear,	<i>L.</i> rigeo, <i>G.</i> recke, <i>vigor.</i>
Σαλευω,	Shal, 2,	move,	<i>Saltient.</i>
Σειρα 12,	Seru,	chain,	<i>L.</i> series, <i>ερω</i> , <i>Go.</i> siwia, <i>Li.</i> suwu.
Στερεος 10,	Sthira, 23,	firm,	<i>Li.</i> storas, <i>G.</i> starr.
Συν,	Sam, 550,	with,	<i>Li.</i> su, <i>Ga.</i> so, <i>G.</i> sammt. <i>R.</i> so. <i>L.</i> simul, <i>P.</i> ham.
Στομα 106,	Stoma, 1,	praise.	<i>G.</i> stimme.

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Σπλην 6,	Plíhan, 1,	spleen,	<i>Splenetic.</i>
Σημα 62,	Símá, 11,	boundary,	
Σεβω 38,	Sev, 12,	worship,	<i>Serve.</i>
Στιβαρον 42,	Shabira, 2,	fixed,	<i>Stuff.</i>
Σπαιρω 7,	Sphár, 11,	throb,	
Σευω,	Su,	go, ☿	<i>Go. saija, G. sâe, som, Li. seju, R. sieiu.</i>
Σκια 43,	Chháya, 20,	shade,	<i>P. sáyah, R. sien, Go. skadus, G. schatte.</i>
Σειριος,	Súrya,	sun,	<i>G. sonne, L. sirius, C. haul, Li. saule.</i>
Σπαω,	Spháy,	increase,	<i>L. spisso, Li. spaudziù.</i>
Σφιγγω,	Spash, 6,	bind,	<i>G. spitze.</i>
Στολος,	Sthala,	firm ground,	<i>G. stiel, στηλη, Ga. stol, R. stul, G. stuhl, stool.</i>
Στηνιον	Stan, 13,	bosom,	
Στεγω,	Sthag, 10, •	cover,	<i>G. stecke, stick, Li. stegiu, L. stagno.</i>
Στειβω,	Stambha, 10,	stiff,	<i>G. stopfe, B. stipo, G. stopfe, stop, R. stupaiu.</i>
Σφαιρα,	Swar, 37,	sky,	<i>P. siphar, G. sphäre, atmosphere.</i>
Σηραγξ,	Surangá, 1,	hole	
Τρια,	Tri, 160,	three,	<i>Li. trys, R. tri, Ga. tri, G. drei, Go. threis.</i>
Τετταρες,	Chatur, 30,	four,	<i>R. czetwertyi, Li. Ketwortas, G. vierte.</i>
Τιθημι,	Dhá, 40,	place,	• <i>Ga. deanam.</i>
Ταρασσω, 31,	Tras, 3,	fear,	<i>L. terreo, R. triasu.</i>
Τρεχω 172,	Trag, 1,	move,	<i>L. traho, Go. thragia, G. trage, drag, Li. traukin, R. [trogain.]</i>

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Ταχα,	Tak,	move,	<i>Li. teku, R. teku, Ga. tegam.</i>
Τον,	Tam,	it,	* <i>Go. thana, G. den, R. tot, Li. ta.</i>
Τερπω 15,	Tarpana, 4,	pleasing,	<i>Li. tarpsatu.</i>
Τοκος 126,	Tuj, 2,	offspring,	<i>G. zeuge, Go. taubia.</i>
Τεινω 203,	Tani, 71,	extend,	<i>L. tendo, G. dehne tend.</i>
Τεκτων 48,	Takshan, 4,	carpenter,	<i>G. teiche, Li. taszau, L. tignum, R. teszu.</i>
Τελειω,	Tal, 2,	complete,	<i>Li. czelas, R. ciel, G. ziel, L. solidus.</i>
Τιτθη,	Τάτά,	mother,	<i>Go-thiuda,*Ga. tuath, C. tud, R. tescza.</i>
Τορε,	Tathá, 4,	then,	<i>L. tum, G. dann, Li. tada, then, R. togda.</i>
Τερμα,*	Tarman,	limit,	<i>W. tervyn, Ga. teor,</i>
Τερρω,	Trí,	pass across,	<i>L. tero, L. trans, Go. thairh.</i>
Τυπτω,	Tup, 2,	injure,	<i>G. tapfe, tap, R. topaiu, F. tape.</i>
Τηρω,	Trá, 5,	preserve,	
Τε,	Tu,	but,	
Τυχοος,	Tuj, 2	offspring,	<i>G. Zeugen, Go. taubia, τεκω.</i>
Τρυσαις,	Trut, 4,	cut,	<i>L. tero, G. driesse, τροπος, R. tru, G. trenne,</i>
Τυφος,	Dhúpa, 6,	incense,	<i>G. dufte.</i>
Τρυγω,	Dhrák, h,	dry,	<i>L. tergo, G. trockne, drain.</i>
Τερχνοος,	Třina, 34,	grass,	
Υερον 12,	Utta, 4,	wet,	<i>L. udum, G. otter, Li. udra.</i>
Υδωρ 63,	Uda, 43,	water,	<i>L. unda, Go. wato, Li. wandu, wet, R. wydra.</i>

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Υπο,	Upa, 186,	beneath,	<i>L. sub, Go. uf, G. ob, Li. pa, up, R. pa.</i>
Υφαιω 38,	Váp, 5,	weave,	<i>L. opus, web.</i>
Υιος,	Súsh,	bring forth,	<i>Li. sunus, R. sieu, L. satus, ιως.</i>
Υψου,	Uchhakais, 30,	high,	<i>W. uchēdiad G. hoch.</i>
Υγιειν,	Oj, 3,	strength,	<i>Hygiene.</i>
Υπερρος,	Uttara, 66,	superior,	<i>L. exterus.</i>
Υγρος,	Uksh, 1,	wet,	<i>Li. ukta.</i>
Υπερ,	Upari, 5,	above,	<i>L. super, Go. upar, superior.</i>
Φοβορ 34,	Bhíshma, 55,	terror,	<i>L. paveo, Li. bijau, R. boiu.</i>
Φαιω 60,	Bhá, 24,	shine,	<i>L. foveo, Go. botia, φαιδρος.</i>
Φλῆξω 60,	Plush, 2,	burn,	<i>L. flagro, G. blitze, Li. blizgu R. blistain.</i>
Φαγω 112,	Bhoga, 19,	eat,	<i>L. fagis, anthropophagi.</i>
Φωνη 121,	Ván, 15,	sound,	<i>G. weine, euphony.</i>
Φυη,	Bhú, 127,	be,	<i>Go. bava, be, L. fons, R. bywau, Ga. bu.</i>
Φιλειω,	Pál,	protect,	<i>φιλᾶσσω. philantrophy.</i>
Φρισσω,	Bhrasj, 1,	patch,	<i>L. frigeo, G. frierend, R. priazus, L. frigus, G. frost.</i>
Xειρ 120,	Kara, 74,	hand,	<i>Li. hir, Ga. cior, cheiromancy.</i>
Xθες 4,	Hvas, 1,	yesterday,	<i>L. heri, Go. gistra, G. gestern, yester.</i>
Xαμαι 7,	Bhími; 53,	earth,	<i>L. humus, Li. zieme, R. zemlia.</i>
Xθων 14,	Kshoni, 7,	earth,	

GREEK.	SANSKRIT.	MEANING.	COGNATES.
Χαλκον 48,	Khalina, 2,	bridle bit,	
Χειμα,	Hima, 37	cold,	Li. ziema, R. zima.
Χαρτος,	Hristas, 8,	joyful,	
Χριω,	Ghri, 21,	sprinkle,	
Χοιρος,	Kira, 1,	hog,	
Χαινω,	Khan, 7,	dig.	
Χην,	Hansa,	goose,	L. anser, G. gans, Li. zasis, R. gus.
Ψαω 56,	Pas,	touch,	
Ωφελιμον,	Aphala,	unfruitful,	
Ωμων,	A'ma,	raw,	L. ode, ode.
Ωδη,	I'd,	praise,	L. ocior.
Ωκυς,	A'shu,	quick,	L. ut, Go. at
Ως,	Yat,	as, f	

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Aptare,	Aptoti, 10,	provide,	Go. hafts, αφθεις, F. apte, P. yabad, H. aphad, S.
Œvum,	A'yu, 9,	age,	L. ætas, αιων, Ga. aois, C. eu, G. ewig. [habban.
Acium,	Asra,	edge,	Go. ahs, G. ecke, C. awch, L. acer, ακη, R. ostrië.
Axis,	Aksha, 2,	wheel,	G. achse, Li. aszis, azle, αζων, R. os.
Ago,	Aj,	move,	αγω, agent, enact.
Anser,	Hansa, 16,	goose,	G. gans, Li. zasis, χην.
Aula,	A'laya,	house,	Hall, αυλη, G. halle, H. áhal.
Annus,	Háyana,	year,	Ενος, H. shánáh, annual.
Antiquus,	Antaga, 1.	dead,	αντιος, antiquity, L. ante.
Ambio,	Am, 205,	move,	αμφι, G. um, Li. api, C. am, R. ob.
Ars,	Artha, 53,	cause,	G. art, artist, αρετη.
Abjectus,	Avagít,	reproached,	Abject.
Aveo,	Av,	excite affection,	οιω, avidity, H. ábháh. W. awyz.
Alvus,	Uiva,	womb,	L. vulva, alvine.
Arvus,	Urwará,	fertile land,	αρουρα, L. ruris, arable.
Anguis,	Nága,	snake,	G. unk, Li. angis, εις, R. uz.
Acer,	Khara, 3,	sharp,	οζυς, F. aigre, acrid.
Alo,	Pál, 12,	nourish,	Aliment.
Ab,	apa,	separate,	Go. af, G. ab, of, Li. ap, R. ob, Ga. o.
Ad,	At,	approach to,	Go. at, C. at, αρω, S. æt.
Antrum,	Antara, 54,	within,	Εντρος, αντρον.
Aqua,	A'pal,	water,	Go. ahwa, Li. uppá, S. ewe, L. amnis, P. áb.
Aurora,	Ushas, 42,	dawn,	Li. auszras, R. utro.

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Æquus,	A'ikya,	unity,	εἰκος, <i>equity</i> .
Avis,	A'ti,	bird,	αετος, <i>C. adn, aviary</i> .
Æs,	Ayas,	iron,	Go. aiz, <i>G. eisen, F. airain, S. æs, A. ayar.</i>
Arceo,	Rich,	screen,	εργω, <i>apκew, coercion</i> .
Aut,	Uā, 2,	also,	ητε, <i>Go. aithav, Ga. achs, C. ai, G. auch.</i>
Ante,	Äi, 112,	over,	Go. and, <i>G. ant, Li. at, Ga. ath, avti.</i>
Aries,	U'rná wool,	ram,	Li. eris, <i>εppας</i> ,
Amarus,	Amla, 19,	sourness,	H. mar, <i>L. myrrha, μυρρα</i> .
Amo,	Am, 1,	honour,	ιμερος, <i>H. chamad, amiable, P. kam.</i>
Ansa,	Ansha, 10,	part,	H. ozen.
Arena,	Renu, 2,	dust,	H. cháron, <i>L. areo, F. arène.</i>
Arma,	Barman, 2,	armour,	<i>armed, F. armee.</i>
Argentum,	Rájata,	silver,	αργυρος, <i>Ga. airgidh, W. arriant.</i>
Alius,	Anyas,	the other,	αλλος, <i>G. jener, Li. anas, R. inyí, C. allar.</i>
Bellum,	Valam,	army:	πολεμος, <i>belligerent, βελος.</i>
Bibit,	Pivati, 27,	drink,	πιω, <i>H. phi, imbibe.</i>
Buccinum,	Bukka, 5,	sound,	βυκανη.
Bonus,	Púnayas, 33,	virtuous,	L. bene, <i>benefit, F. bien.</i>
Cacumen,	Shikhá, 16,	top,	Li. kaukaras, <i>G. acumen.</i>
Calix,	Kaliká, 3,	unblown,	G. kalch, <i>κυλιξ, R. kulgan, Li. kylikas. [νος, holm.</i>
Collis,	Kúla,	a mound,	G. hülle, <i>κωλον, Li. kalwa, R. ch olm, G. kulm, καλω</i>

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Cordis,	Hṛīd,	heart,	<i>Ga.</i> críodhe, <i>G.</i> herz, καρδία, cordial, <i>Li.</i> szirdis, <i>Go.</i>
Creo,	Kṛi,	make,	κρεω, <i>L.</i> cura, <i>G.</i> kram, <i>Li.</i> kromas. [hairto.
Concha,	Shankha,	shell,	κογχή, <i>conch</i> , <i>F.</i> conchites.
Clam,	Chulum,	disappear,	<i>L.</i> clandestinus, <i>H.</i> álam.
Cœlum,	Khila,	empty,	κόλον, <i>celestial</i> , <i>F.</i> celeste.
Carus,	Shreyas,	excellent,	<i>Li.</i> geras, <i>C.</i> car, <i>L.</i> gratus, χαριεις, <i>F.</i> cher.
Carmen,	Karman,	incantation,	<i>L.</i> cæremonia, <i>F.</i> ceremonial.
Cano,	Gána,	sing,	<i>Ga.</i> canam, <i>W.</i> canu, <i>F.</i> chant, <i>S.</i> galan.
Cæsaries,	Kesha, 49,	hair,	<i>Li.</i> kasa, χαιτη.
Cœdo,	Shad, 7,	wound,	<i>G.</i> schäder, <i>Li.</i> skaudus, <i>scathe</i> , κηδω.
Cortex,	Kṛitti,	bark,	cork, <i>G.</i> kork, χρως,
Crepusculum,	Kshapá.	night,	<i>L.</i> crepus,
Crus,	Kshura.	hoof,	<i>H.</i> keráng, <i>crural</i> , <i>F.</i> crural.
Cio,	Chi.	collect,	γαω, χέω, <i>excite</i> .
Centum,	Shatam, 66,	*hundred,	εκατον, <i>Ga.</i> ciad, <i>R.</i> sto, <i>G.</i> hundred, <i>Li.</i> szemtas, <i>P.</i> sad.
Cymba,	Kumbha, 18,	water jar,	κμβος, <i>P.</i> khum, <i>cymbal</i> .
Caligo,	Kalusha, 3,	opacity,	αχλυσ, <i>caliginous</i> .
Cautes,	Kataka, 1,	rock,	<i>F.</i> queux, <i>L.</i> cos.
Carcer,	Kāgára, 2,	jail,	<i>L.</i> coerceo, <i>incarcerate</i> , <i>F.</i> concierge.
Cella,	Kula,	abode,	κλειω, <i>H.</i> kálá, <i>celler</i> .
Cruz,	Krichhra, 3,	pain	κρριον, cross, <i>F.</i> croix.
Candeo,	Chanda, 9,	warm,	<i>G.</i> scheine, <i>kindle</i> <i>Go.</i> skeina, <i>C.</i> cyane.
Calamus,	Kalama, 3,	reed,	<i>L.</i> culmus, <i>G.</i> halm, <i>R.</i> soloma, <i>F.</i> chaume.
Caleo,	Jwálá, 16,	flame,	<i>Li.</i> szilta, κηλειω, <i>F.</i> chaud, <i>calefaction</i> .

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Clavis,	Shlesh, 10,	junction,	<i>L. clausus, κλειω, S. cæggian, clavicle.</i>
Curro,	Char, 28,	go,	<i>G. karren, car, χορος, F. char, current.</i>
Celer.	Chalat, 14,	moving,	<i>Li. kelu, κελης, celerity, F. celerite.</i>
Celo,	Sham,	cover,	<i>Ga. ceil, C. celu, G. hehle, hill, κλειω, W. cel.</i>
Ceva,	Gau, 75,	cow,	<i>G. kuh, R. gowiado, P. gau, Z. gao, S. cu H. gaah.</i>
Contus,	Kunta, 2,	lance,	<i>κοντος,</i>
Cingo,	Kuch, 9,	confine	<i>κυκλος, L. coxa, cincture.</i>
Como,	Káma,	-desirable,	<i>κομεω, L. comis, comely.</i>
Cerno,	Krí,	scatter,	<i>κρινω, L. caro, discern.</i>
Carbasus,	Kárpása,	cotton,	<i>καρπασος, H. karpas, P. karfas, A. karbas,</i>
Cum,	Sam,	with,	<i>Go. ga, Ga. co, C. can, F. con, commotion.</i>
Corpus,	Garbha, 34,	fetus,	<i>C. corf, corpse, G. korper, F. corps.</i>
Cranium,	Shiras, 32,	head,	<i>Go. hwairm, G. him, κρανιον, F. crâne, Ga. caran.</i>
Calva,	Shal, 2,	cover,	<i>Li. galwa, Go. coll, αυλη, L. cella, R. golowa.</i>
Cirrus,	Shirojá,	hair,	<i>κορσα, L. crinis, Li. karczis, R. szerst, S. cyrran</i>
Coxa,	Kuksha, 3,	belly, *	<i>hough, κοχωνη, S. hog</i>
Caro,	Krabya, 5,	flesh,	<i>κρεας, carnal, F. carnal.</i>
Cruror,	Srabana,	oozing,	<i>Li. kraujas, C. crau, L. crudus, gore, R. krav.</i>
Colo,	Halin, 13,	cultivator,	<i>Li. kalu, Go. holo, colony, κλω, G. höhle, R. kalu.</i>
Cadus,	Kada,	waterpot,	<i>C. caed, kettle, κορυλος, R. kad, Go. kas, G. kessel.</i>
Caulis,	Shala,	stake,	<i>G. keule, Li. kolas, κυλος, R. kol.</i>
Cassus,	Shesha,	diminish,	<i>χαττω, κατα, L. casus, R. ko.</i>
Clausus,	Shlishta,	connected,	<i>κλειω, close, G. schluss, χωλνω, G. halts.</i>

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Conor,	Shan, 6,	move,	ΚΟΝΕΩ.
Cras,	Shwas, 2,	to-morrow,	<i>Procrastinate.</i>
Certus,	Shraddhá, 20,	belief,	κριος, <i>G. haut, hide, R. koza, cuticle.</i>
Cutis,	Kritti,	skin,	κυτος, <i>G. haut, hide, R. koza, cuticle.</i>
Credo,	Shraddhá,	faith,	καρδια, <i>credul, L. credulus, F. credit.</i>
Dies,	Divasa, 23,	day, *	[dæg.]
Disco,	Dishā,	advised,	<i>Ga. dia, W. dydh, G. tag, δαος, Li. diena, R. den, S.</i>
Dexter,	Dakshina, 7,	right hand,	<i>W. dysgu, δεικνυω, G. zeige, Ga. teagasg, δοξω,</i>
Domo,	Dám, 12,	tame,	<i>Li. dezine, Gó. taihswa, δεξια, R. desnaia, dexterity.</i>
Durus,	Dhri,	hold,	<i>δαμω, Gó. tamiths, G. zahm, H. dáma, C. dyn,</i>
Deus,	Deva, 162,	God,	<i>A. tamnnu, Ga. duine.</i>
Dens,	Danta, 45,	tooth,	<i>Li. turru, C. tarius, G. daure, τηρεω, H. dor, P. turaz.</i>
Da,	Dá, 35,	-give,	<i>Ga. dia, C. diuw, θεος, Li. diewas, P. dio. [G. zahm.]</i>
Debilis,	Durbala,	difficult,	<i>W. dant, Gó. tunthas, Li. dantis, P. dandam, οδους</i>
Decus,	Tejas, 16,	dignity,	<i>Li. dunis, δαρος, R. dan, Li. dünis, Z. da. [dentist.</i>
Divido,	Vidhava, 2,	separate,	<i>debility, F. debile, H. dáv, A. dab.</i>
Dis,	Dwishas,	twice,	<i>C. tegweh, δει, G. tugend, indecorous.</i>
Domus,	Dháma,	house,	<i>G. weide, L. viduus, ιδιος, division.</i>
Densus,	Dehin,	corporeal,	<i>dia, Ga. dis, displace, F. dis, Go. dis.</i>
Dormio,	Drá,	sleep,	<i>δωμα, G. dom, dome, δειω, R. dom, Ga. dom.</i>
Decem,	Dashan, 32,	ten,	<i>G. dick, δαους, Li. duzas, H. dāshen, A. dashan.</i>
			<i>δαρθεω, G. träum, R. dremliu, dream.</i>
			<i>Ga. deich, R. desiat, Li. deszimt, G. zehn, P. deh.</i>

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Esse,	Astu,	be,	<i>Essence, present, F. essentiel, Ga. as, W. ys.</i>
Et,	Atha, 4,	and,	<i>ηδε, G. und, Li. ir, F. et, Ga. as.</i>
Evanesco,	Vinášha,	disappear,	<i>Evanescēt.</i>
Ego,	Aham,	I,	<i>G. ich, Ga. mi, C. mi, P. men, R. ia, εγω, Go. ik.</i>
Ensis,	Asi, 2,	sword,	<i>εγχος.</i>
Estus,	Iddha, 14,	blazing,	<i>αθος, G. hitze, heat, Ga. aodhair, C. etc.</i>
Eu,	Ay, 1,	go,	<i>Li. eimi, transient, W. he.</i>
Ex,	Uchcha,	high,	<i>Go. us, G. aus, Li. uz, Ga. as, C. uch, R. woz.</i>
Erro,	Ir, 2,	go,	<i>G. irre, err, ερρων, F. erre.</i> [S. etam.
Edo,	Ad,	eat,	<i>εδω, G. essen, R. iedenie, Go. itands, Ga. ith, edbile,</i>
Fundus,	Phandas, 1,	belly,	<i>fundament.</i>
Femina,	Vámá,	woman,	<i>Ga. W. benw, effeminate, bean.</i> [Li. peru, bean.
Fero,	Bhri, 32,	bear,	<i>φερω, Ga. beir, G. bären, P. barad, R. beru,</i>
Fluvius,	Plava,	piece of water,	<i>πλωος, R. plawen. G. fluss, Go. flodus, S. flum.</i>
Folium,	Phal, 90,	bud,	<i>L. floreo, G. blühe. foliage Ga. plur.</i> [Ga. brathair.
Frater,	Bhrátri,	brother,	<i>Go. brothar, W. brodyr. R. brat, φρατωρ, P. braudur,</i>
Frons,	Pránta, 1,	border,	<i>front.</i>
Fuit,	Bhavati,	be,	<i>φυετα, P. bawad, beeth.</i>
Fanum,	Vayunam,	temple,	<i>ναον, profane.</i>
Ferox,	Parusha, 4,	severe,	<i>φηρ, H. pere, ferocious.</i>
Foris,	Vahis,	outwards,	<i>L. fores, forensic.</i>
Findo,	Vibheda, 31,	splitting,	<i>Bite, L. fodio, G. faden, H. bádad.</i>
Feus,	Sphítam, 9,	open as a bud,	<i>φυτος, F. fetus.</i>

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Focus,	Bhás, 24,	light,	φωγω, <i>suffocate</i> .
Fari,	Bhásá, 10,	word,	φαζω, <i>L. fas, nefarious</i> .
Filius,	Bálísha, 2,	young,	φύλον, <i>affiliate, F. filial</i> .
Fugio,	Bhishá, 1,	dread,	<i>Li. begu, φύζω, R. biegu, F. fuis, refuge.</i>
Fremo,	Bhran,	sound,	βρεμω, <i>F. fremir</i> .
Finis,	Phanita,	gone, •	φενω, <i>F. finis, infinitive.</i>
Garrio,	Grí,	sound,	<i>Li. girru, G. girre, L. gyrus, γηρωω, R. graiu, garru- [lous.</i>
Genus,	Jana, 95,	mankind,	<i>Ga. gean, ενος, P. zenne, Li. genu, Go. kuni, kin.</i>
Genu,	Jánu, 3,	knee,	<i>γονυ, G. knie, Go. kniu, P. zánu, F. genu, R. gnu, S.</i>
Gravis,	Guru, 22,	heavy,	<i>Go. gauria, F. grave, R. grubyi, gravity. [cneou.</i>
Gero,	Grāh, 78,	take,	<i>gesture, F. geste, P. girad.</i>
Gelu,	Jala,	cold,	<i>R. cholod, Li. szaltis, G. kälte, F. gelee, gelid, S. cælan.</i>
Gustus,	Ghasti, 6,	eat,	<i>γευω; G. kost, gustation.</i>
Gutta,	Hita,	poured,	<i>χυρος.</i>
Hodie,	Adya, 4,	to-day,	<i>Go. hindag, G. heute, Ga. anduigh, Li. szendien.</i>
Humus,	Bhúm, 35,	earth,	<i>Li. zieme, P. bum, χημα, Go. guma, exhume.</i>
Hyems,	Hima, 37,	cold,	<i>Li. ziema, χεμα, F. hivernal.</i>
Hora,	Horá,	hour,	<i>ωρα, F. heure, H. aor, hourly, horsocope.</i>
Hircus,	Eraka,	ram,	<i>L. hirsutus.</i>
Horritus,	Hṛishṭa,	haire erect,	<i>ορρωδεω, horrent.</i>
Hæres,	Hṛi, 7,	take,	<i>L. gero, χηρος, hereditary.</i>
Hædus,	Edaka,	ran; •	<i>H. gedi.</i>

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Id,	Iti,	it,	Go. ita, G. es, Ga, e, R. ono.
Idem,	Idam,	this,	L. item, F. item, <i>identity</i> .
Ignis,	Agni, 70,	fire,	Li. ugni, αἰγλη R. ogn, Ga. aghna, <i>ignie</i> .
Inquit,	Kathá, 20,	word,	<i>Quote</i> .
Intra,	Antar, 54,	midst.	Go. undar, Ga. eider, εντρος, <i>under</i> , R. wnutr.
Ita,	Iti, 5,	thus,	ετρα.
Itum,	Eti, 1,	going,	ιθυς, Li. eimi, Go. iddia, C. æthym, R. idu, H. atha.
Imbris,	Ambhas, 12,	water,	ομβρος.
Ira,	I'rshyá, 9,	envy,	επιζω, <i>ire</i> , R. iaryi, S. yvre.
Jungo,	Yuj, 40,	join,	Go. juk, Ga. ceangail, C. jau, P. yugh, G. joch, R. igo.
Jovis,	Div,	heaven,	H. yehováh
Juvenis	Yuvan,	young,	P. yuvan, W. jeuant, Li. jaunas, G. jugend, R. iunyí, [ηβαν.
Jecur,	Yakrit,	liver,	ηπαρ, <i>hepatic</i> , F. hepaticque.
Jus,	Yúsha,	soup,	<i>juice</i> , Li. júka, R. iucha, F. jus.
Justus,	Yuta, 3,	adapted	<i>Justice</i> , F. justesse.
Jurgo,	Jarj, 2,	blame.	οργιζω.
Loquor,	Loch,	speak,	λογος, <i>elocution</i> , Go. lahia, R. likuiu.
Labium,	Lapanam, 7,	mouth,	C. lap. Li. lupe, G. lippe, F. levre, S. lippa, P. law.
Læd	Ludi, 14,	resist,	λαζω, G. leid, F. lese.
Lætus,	Hlad, 3,	delight,	λαω, <i>glad</i> , Go. lusto, Li. losztu, G. lüste.
Levis,	Laghu, 27,	light,	λειος, <i>levity</i> , <i>relief</i> .
Ligo,	Lig, 7,	touch,	Li. laikan, λυγωω, F. lie, <i>oblige</i> , L. religio.

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Libido	Lubdh,	desirous,	Go. leibia, G. liebe, <i>Li</i> lubijas, <i>love</i> , <i>R.</i> liubow, <i>H.</i> leváv.
Locus	Loka, 35,	world,	λαος, G. lage, C. llach, λεχος, <i>R.</i> loze, <i>local</i> , <i>F.</i> local.
Lux.	Loka, 9,	shine,	Go. leiks, <i>W.</i> lhug, λευκος, <i>R.</i> luez, <i>light</i> , <i>G.</i> licht.
Luvium,	Lina,	melted,	λω, <i>lave</i> , <i>L.</i> alluvium, <i>F.</i> alluvion.
Ludo,	Lad,	sport,	<i>H.</i> luz, <i>ludicrous</i> , λωω, <i>G.</i> letze.
Lateo,	Lud,	conceal,	λαθω, <i>H.</i> lát <i>latent</i> , <i>F.</i> latent.
Longus,	Lagna, 4,	connected,	<i>G.</i> lang, <i>Go.</i> langs, <i>F.</i> long, <i>S.</i> lengian, <i>longitude</i> .
Moles,	Múla, 20,	root,	<i>Mole</i> , <i>L.</i> moles, <i>F.</i> môle.
Murmur,	Marmara,	rustling,	<i>G.</i> murmeln, μυρμυρον, <i>Li.</i> murmas, <i>R.</i> murczu.
Mirror,	Mrish,	discern,	μερδω, <i>mark</i> , <i>Go.</i> marka, <i>G.</i> merke, <i>admire</i> .
Mordeo,	Mrid,	grind,	μεριζω, <i>G.</i> morsch, <i>remorse</i> .
Murus,	Mur, 5,	encircle,	<i>G.</i> maure, <i>immure</i> , <i>F.</i> mure, <i>L.</i> moror, <i>Li.</i> muras.
Malus,	Mala,	sin,	<i>G.</i> mahl, μελας, <i>F.</i> mal, <i>A.</i> malam <i>malevolent</i> , <i>S.</i> mal.
Mare,	Míra,	ocean,	<i>Go.</i> marei, <i>W.</i> môr, <i>Go.</i> muir, <i>R.</i> more, <i>G.</i> meer, <i>A.</i>
Mas,	Mánusha,	man,	<i>C.</i> mon, <i>G.</i> mensch, <i>R.</i> muz, <i>Go.</i> manna, <i>masculine</i> .
Medium,	Madhya, 28,	midst,	<i>Go.</i> midums, <i>G.</i> middle, μερος, <i>R.</i> mezdu, <i>P.</i> mian, <i>marakv</i> .
Meum,	Mama,	mine,	<i>G.</i> meiner, <i>Go.</i> mo, <i>P.</i> men, <i>G.</i> ma.
Magnus,	Mahán, 239,	great,	<i>R.</i> mogucz, <i>Go.</i> mor, <i>C.</i> mawr, <i>Li.</i> maenus, <i>G.</i> manch,
Menda,	Manda,	vile,	μετων, <i>mendacious</i> .
Mens,	Manas, 103,	mind,	<i>Go.</i> man, <i>C.</i> mynnu, <i>mental</i> , <i>G.</i> meinen, <i>A.</i> manyi. [<i>mass</i> .
Metiri,	Mita, 10,	measured,	<i>Go.</i> mitaths, μυα, <i>L.</i> modus, <i>H.</i> mádád, <i>R.</i> meza, <i>G.</i>
Mors,	Mrita, 34,	dead	<i>Li.</i> marinu, <i>W.</i> marw, <i>H.</i> meth, <i>Go.</i> marbh, μορος,
Mus,	Músh,	mouse,	μυς, <i>P.</i> mush, <i>G.</i> maus, <i>R.</i> mysz, <i>S.</i> mus. [<i>R.</i> merius.

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Motus,	manth,	agitate,	μοθος, <i>Li.</i> metu, <i>G.</i> mühe, <i>R.</i> metaui, <i>motion.</i>
Mitto,	Míta, 4,	cast,	μεθημι, <i>missile</i> , <i>F.</i> missionaire.
Moneo,	Man,	understand,	μνηνω, <i>G.</i> mahne, <i>mean</i> , <i>R.</i> manui, <i>monument.</i>
Musca,	Mashaka, 5,	mosquito,	μυια, <i>nidge</i> , <i>Li.</i> musse, <i>P.</i> magas, <i>G.</i> mucke, <i>R.</i> mucha.
Mensis,	Más, 11,	month,	<i>G.</i> mond, <i>Li.</i> menú, <i>F.</i> mois, <i>G.</i> menoths, <i>Ga.</i>
Mersio,	Mrishta, 6,	sprinkling,	<i>Li.</i> merkui, <i>F.</i> merge, <i>immersion.</i> [mios.
Mulier,	Mallá,	woman,	<i>G.</i> magd, <i>G.</i> magaths, <i>muliebrity.</i>
Mensa,	Mánsa, 16,	flesh,	<i>G.</i> mes, <i>Li.</i> miesa, <i>μαζα</i> , <i>G.</i> mett, <i>R.</i> miaso, <i>C.</i> maeth.
Meto,	Mash,	cut,	<i>Mow</i> , <i>mess</i> , <i>αμετος</i> , <i>G.</i> mähd, <i>G.</i> maíta,
Mancus,	Manák,	little,	<i>Li.</i> menk, <i>C.</i> man, <i>minikin.</i>
Mugio,	Muj, 1,	sound,	μυκαω, <i>L.</i> musso, <i>mutter</i> , <i>G.</i> muhe, <i>Li.</i> myczu.
Mitis,	Mitra, 12,	friend,	<i>Mitigate</i> , <i>F.</i> <i>Mitiger.</i>
Muto,	Mithas, 5,	reciprocally,	<i>H.</i> mot, <i>mutation</i> , <i>F.</i> mutabilite.
Miscere,	Misra, 70,	blend,	μισγω, <i>H.</i> mezeg, <i>A.</i> masak, <i>S.</i> miscan, <i>mixture.</i> [tilate.
Mutilo,	Mush, 26,	cut, -	μασσω, <i>G.</i> matia, <i>Li.</i> muczu, <i>R.</i> myczu, <i>G.</i> mutze, <i>mu-</i>
Munio,	Man,	oppose,	μενω, <i>R.</i> maniu, <i>ammunition</i> , <i>municipal</i> , <i>F.</i> munition.
Monile,	Maní, 29,	gem,	μυρος,
Mado,	Mid, 5,	liquify,	<i>Li.</i> madau, <i>μελος</i> , <i>L.</i> <i>R.</i> mytyi, <i>medulla.</i>
Meditor,	Medh, 6,	comprehend,	μηδω, <i>G.</i> modo, <i>Li.</i> mishju, <i>R.</i> myslu, <i>meditation.</i>
Mundo,	Mand, 23,	ornament,	ματτω, <i>F.</i> monde.
Medulla,	Medas, 12,	marrow,	<i>R.</i> mozg, <i>G.</i> mark, <i>medullary.</i>
Mutus,	Múka, 1,	dumb,	μυκος, <i>mute</i> , <i>F.</i> muet.

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Nuncijs,	Nunnæ,	sent,	νεος, <i>annunciate</i> .
Nutus,	Nata,	bowed,	νεω, <i>H. nuang, nod, W. amneidio.</i>
Nasij,	Násá, 20,	nose,	<i>G. nase, Li. nosis, R. nosada, nasal.</i>
Neco,	Násha, 26,	destruction,	<i>L. noceo, νεκος, H. nákah, νοσος, nick, A. nikayat,</i>
Novem,	Navan, 16,	nine,	<i>G. neun, P. nah, R. noi, εννεα, C. naw, november.</i>
Nox,	Nakta, 28,	night,	<i>W. nòs, Ga. nochd, G. nacht. Li. naktis, νυξ, nocturnal.</i>
Nepos,	Naptá,	grandson,	<i>ανεψιος, W. nai, R. netü, G. neffe, F. neveu, nepotism.</i>
Neve,	Navá, 1,	not,	<i>νη, H. ain, Ga. neo.</i>
Nubes,	Nabhas, 28,	cloud,	<i>W. nev, Ga. neamh, G. nebel, C. niwl, νεφος, R. nebo.</i>
Nubo,	Nivará,	virgin,	<i>νυμφη, nymph, connubial,</i>
Nurus,	Snúsa,	daughter-in-law,	<i>νυος, G. schnur, R. snocha.</i>
Nos,	Nah,	us,	<i>Go. unsis, Li. mues, R. nas.</i>
Nidus,	Níd, 2,	nest,	<i>νεοστος, S. nesan, ναιετω, R. gnezdo, Ga. nead, W.</i>
Nomen,	Nám,	name,	<i>ονομα, G. name, R. imie, Go. namo, P. nám, Ga. ainm, [S. nama,</i>
Orno,	U'rnú, 1,	cover,	<i>Adorn, ωρα, F. ornament.</i>
Oculus,	Akshi, 10,	eye,	<i>οκος, G. auge, Go. auga, Li. akis, R. oko, F. œil, A.</i>
Os,	Asthi, 21,	bone,	<i>οστεον, osteology, F. ossu, G. ast, Z. astem, P. astekhun.</i>
Ovis,	Avi, 2,	sheep,	<i>οις, ere, Li. awis, Ga. uan, C. oen, R. owen.</i>
Odium,	Yuddham, 17,	war,	<i>ωθτω, odious, F. odieux, οδυσσω</i>
Otium,	A'sanam,	seat,	<i>Ease, Go. azi, οκνος, εζομαι.</i>
Ostium,	A'syam,	mouth,	<i>R. uste, L. os, ostiary.</i>

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Orbus,	Arbha,	child,	G. erbe, ορφανος, <i>F. orphan, orphan.</i> [<i>Go. ahtan.</i>
Octavus,	Ashṭrama,	eight,	οκτω <i>P. hasht, C. wyth, Li. ashtum, R. osm, Ga. ochd</i> [<i>pasture.</i>
Pastum,	Push, 80,	nourish,	<i>Go. fodia, G. fütter, βοσκειω, R. pastuch, H. ávas,</i>
Pater,	Pitri, 42,	father,	<i>Go. fadar, P. pader, Go. athair, G. vater, R. batia.</i>
Patera,	Pátra, 14,	plate,	ποτηριον, <i>patter, πετω.</i>
Pec,	Páda, 106,	foot,	<i>Li. pézczias, P. pa, G. pfote, R. piata, πῆλος, pedestrian.</i>
Placere,	Priya, 37,	please,	<i>Placid.</i>
Pluo,	Plu, 3,	go,	<i>L. fluo, Li. plauju, G. fluss, Ga. fluich, S. fleuwan.</i>
Polleo,	Bala, 17,	army,	πελω, <i>equi-pollent.</i>
Post,	Paschat, 4,	after,	<i>Li. pas, Ga. foi, R. po, F. puis, postpone.</i>
Potis,	Pati, 14,	master,	<i>Li. pais, P. bud, ποσις, Go. faths, R. pan, potent.</i>
Prælium,	Pralaya,	destruction,	<i>L. prælum,</i> [<i>R. proszu, P. porsad.</i>
Precor,	Prachh, 4,	inquire,	<i>Li. prasyatas, G. sprechen, Go. fraicha, φραζω, pray,</i>
Primus,	Prathama,	first,	<i>R. protiw, propinquity.</i>
Prope,	Prapana,	arriving at,	πωλος, <i>poultry, F. pulluler.</i>
Pullus,	Phullati,	blossoming,	πυθω, <i>Li. bundu, impute.</i>
Putare,	Budh, 35,	understand,	<i>P. pur, παις, puerile Z. potre.</i>
Puer,	Putra, 25,	son,	<i>Li. putas, πυνεω, F. pus, putrid.</i>
Puteo,	Púti, 30,	stinking,	<i>G. butze, πυρ, F. purifier, puritan.</i>
Purus,	Pú, 35,	purify,	<i>Go. faihu, G. vich, πωυ, Ga. beathach, pecuniary.</i>
Pecu,	Pashu, 23,	beast,	<i>L. pinso, πισσω, Li. paisau.</i>
Pistum,	Pish, 24,	pound,	

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Parvus,	Páyvas,	low,	<i>Go. beg, C. bach, Li. piggus, G. feige, Go. faw, παυρος.</i>
Plenus,	Pulas, 14,	great,	<i>Go. fulls, πλεος, plenitude.</i>
Paveo,	Bhí, 55,	fear,	<i>Li. bijau, πτοεω.</i>
Piscis,	Payas, 18,	water,	<i>C. fisch, C. pyg, fish, Go. fisks, F. poisson, piscivorous.</i>
Pingo,	Pij, 5,	colour,	<i>πικω, R. piszu, F. peins, paint.</i>
Pigeo,	Puchh,	careless,	<i>H. págar.</i>
Pungo,	Pija,	kill,	<i>Go. fja, Li. piaujeo, L. pugna, πικω, G. fechte, point.</i>
Puteus,	Pud, 10,	hole,	<i>βυθος, G. pfutze, pit, F. puit.</i>
Pars,	Prithak,	cast,	<i>H. paras, party, F. partir.</i>
Palus,	Palwala,	pond,	<i>G. pfuhl, ηηλος, pool, S. pul.</i>
Pontus,	Páthis, 7,	sea,	<i>ποντος.</i>
Pardus,	Pridáku,	leopard,	<i>παρδος, G. parder, Li. pardas, leopard.</i>
Picus,	Pika, 7,	cuckoo,	<i>G. picker, F. pie.</i>
Palea,	Palla, 3,	straw,	<i>Li. pelas, R. plew, F. paille, pallas.</i>
Pellis,	Phalaka, 2,	shield,	<i>φολις, G. fell, Li. plewe, R. pleua, C. pil, S. flys.</i>
Portus,	Pára,	cross over,	<i>G. fahre, fare, πορος, ford, import.</i>
Postis,	Pash,	bind,	<i>G. feste, πειζω, R. pazu, post.</i>
Pilum,	Pflu, 2,	arrow,	<i>G. Pfeile, παλλω, pill.</i>
Pugna,	Pinja,	killing,	<i>G. feind, Li. piájvas, R. pichaiu, πύζ, F. pique, pug-</i>
Peto,	Path, 5,	recite,	<i>Go. bida, G. bitte, petition.</i>
Patulus,	Paðal, 1,	thatch,	<i>πταω, H. pátháh, patent.</i>
Quot,	Kati,	how many,	<i>κοςος, Li. koks, R. kak, quotient.</i>

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Que,	Cha,	and,	Ka..
Quis,	Kim,	what,	Li. kas, P. ku, Go. hwas, G. wer, R. koi, Ga. co.
Quid,	Yad,	what,	koton, P. ku. [nial.]
Quinque	Panchan,	five,	πενταρος, R. piaty, G. fünfte, Go. fimfta. <i>quinquen-</i>
Quies,	Shete, 18,	sleeping,	Li. kajus, κειραι, <i>quietude</i> , R. koiu.
Quatuor,	Chatur, 30,	four,	Li. ketturi, Ga. ceithir, R. ezelyre, G. vier, τετραρες,
Rectus,	Rita,	true,	[P. chehar W. pedwar.
Rex,	Rájá, 108,	ruler,	G. recht, Go. raihts, <i>right</i> , S. riht.
Rheda,	Ratha, 29,	car,	Go. rakia, Ga. righ, G. reich, C. rhi, A. reys, <i>regal</i> .
Ritus,	Riti,	custom,	Li. ratas, G. rad, Ga. rotha, C. rhod, ρεδιον, L. rota,
Ros,	Rasa,	juice,	G. reite, L. ortus, ορσις, <i>ritual</i> . [rotation.]
Rapió,	Riph, 2,	injure,	ερση, <i>rosid</i> , R. rosa, F. arrosee.
Ruo,	Ri, 2,	move,	G. rauben, αρπαω, H. árab, Go. raupia, rob, R. rubacz.
Rodo,	Rad, 10,	break,	Go. rinna, L. rivus, Li. rauju, R. roiu, ρυω, <i>rush</i> .
Rudo, roar,	Rud, 5,	wail,	ρησσω, G. reissen, Li. rezas, <i>roul</i> .
Rugo,	Ruksha,	rough,	ροζω, Li. raudoiu, ροθος, R. rydaiu.
Repo,	Rep, 2,	move,	G. rauhe, Li. raukiu, L. raucus, <i>corrugate</i> .
Spiro,	Spri, 1,	breathe,	πεπω, F. rampe, <i>reptile</i> .
Signum,	Chihma,	sign,	Spirít, F. esprit.
Sulphur,	Shulwári,	sulphur,	σημειον, <i>signify</i> , F. signaler, S. segen, H. saman.
Senex,	Sanna, 40,	shrunk,	Sulphuric.
Sanies,	Sanas,	excrement,	Li. senas, Go. sineigs, <i>senior</i> , W. hen, Ga. sean, A. chen.

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Succus,	Sechana,	sprinkling,	G. saft, R. sok, F. suc, <i>suck</i> , L. sunkiu.
Scando,	Skand, 6,	jump,	σκαΐω, G. schiezze, <i>shoot</i> , Li. skecziu.
Suus,	Swa,	his,	G. sich, Go. seins, Li. sawas, R. swoi, εος, <i>suicide</i> .
Serpens,	Sarpa, 28,	creep,	ερω, F. serpent, <i>serpent</i> , W. sarf.
Servire,	Seva,	serve,	ερω, <i>service</i> , σαω, F. sauve.
Silex,	Shila, 28,	stone,	χαλιζ, <i>silicious</i> .
Soer,	Swashura,	father-in-law,	εκυρος, Go. swaihra, Li. sessü, W. chwegran, G. schwa-
Sopio,	Swapna, 13,	sleep,	L. sapnas, G. schlaf, Go. slepa R. spanie, υπνος, <i>soporiferous</i> .
Sono,	Swan, 5,	sound,	Go. sangws, Li. zwanas, C. syniu, R. zwon, G. sang.
Statio,	Sthiti, 40,	place,	Go. stads, G. statte, Li. stonas, R. staiu, <i>stationary</i> .
Suavis,	Swádu,	sweet,	L. suadeo, <i>suavity</i> , F. suave.
Super,	Upari, 5,	above,	υπερ, Go. ufar, G. uber, P. ábar, <i>superior</i> .
Satis,	Sádh,	finish,	<i>Satiare</i> , R. syszczaiu, Li. sotinu, G. sättige, αδω.
Sine,	Sanna,	little,	L. sitis, L. se, Go. seithu, G. seit, R. s, <i>smecure</i> .
Sat,	Sat,	proper,	<i>Satisfy</i> .
Semis,	Sámi, 3,	half,	ημ, F. semi, <i>semi-god</i> .
Sterno,	Str.i,	spread,	[<i>strev</i> .
Scindo,	Khandā, 32,	tear,	σπαω, L. stratum, G. strasse, Go. strauja, R. stroiu,
Scutum,	Khed, 2,	shield,	σχιζω, G. scheiden, Li. skutta, Go. skaida, <i>rescind</i> .
Spes,	Sprihá, 5,	desire,	σπαρη, F. espoir, <i>despair</i> .
Surrus,	Swara, 11,	sound,	G. surren, συρω.
Suadeo,	Swádu,	pleasing,	<i>persuade</i> , F. suasion.
Severus,	Swri,	pain	σεβεσθαι, <i>severity</i> , <i>persevere</i> .

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Stupidus,	Stambha,	stupid,	<i>στρυφνος, stiff, Li. stiprus, G. steiffe, θηπω.</i>
Sol,	Súrya,	sun,	<i>ηλιος, H. hálal, A. halal, R. solntse, solar.</i>
Serum,	Sáyam, 8,	evening,	<i>οψηρον, ορος, F. soir, soiree.</i>
Similis,	Samatá, 550,	equality,	<i>ομαλος, H. seimel, similar.</i>
Seelus,	Skhalana, 5,	wicked,	<i>σκολων, Go. skuld, G. schuld, Li. skelas.</i>
Socius,	Sakhi, 6,	friend,	<i>Li. segu, sasaw, F. socie, associate.</i>
Stultus,	Sthúla, 40,	dull,	<i>L. stolidus, stultify.</i>
Specio,	Spashya, 5,	see,	<i>G. spahe, Li. spigas, σκοπος, H. sháqaph, inspect.</i>
Spolio,	Phal,	cleave,	<i>φλαω, file, Li. peloiu, L. pellis, R. peliu, G. feile.</i>
Spargo,	Sphurchh,	spread,	<i>Li. sprogstu, σφριγaw, G. springe, spring.</i>
Sedes,	Sadas, 3,	meeting,	<i>Go. sitts, G. sitz, Li. sedziu, εδος, seat, R. sazu.</i>
Scire,	Súchi, 17,	espy,	<i>Sight, G. sicht, L. sagio, G. schau, shon. [desiccate.</i>
Sitis,	Shus.hka,	dry, 12,	<i>Li. sauzau, L. siccus, σαυκος, R. suchü, C. sych, desiccate.</i>
Satur,	Sád, 6,	weariness,	<i>G. satt, Li. satus, R. sytyi, Go. sads, S. sadian, satiate.</i>
Spissus,	Sphíta,	swollen,	<i>Li. spaustas, σπιδνος, inspissate.</i>
Seco,	Sagha,	hurt,	<i>C. sigu, saw, L. securis, insect, sec, C. sigu, R. sieku.</i>
Salio,	Shal,	move,	<i>αλλομαι, Go. salta, F. saillis, H. hale, salient.</i>
Sudus,	Shuddha,	pure,	<i>αγαστος, L. castus, Go. gods, chaste.</i>
Taceo,	Túshníka, 3,	silent,	<i>ακειω, tacit.</i>
Tactus,	Twach,	move,	<i>θιξις, Li. tókumas, Go. tekan, R. tykaiu, take, F. toucher.</i>
Tæda,	Dah,	burn,	<i>δατς, Ga. doth.</i>
Tepeo,	Tap, 34,	heat,	<i>τηρω, Ga. tath, P. tábad, R. teplyi, F. tiede, tepid.</i>

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Tenuis,	Tanu, 71,	thin,	L. tener, G. dünn, C. tenau, P. tanak, H. táchan, R. to-nok, ταναος, A. tanazzur, S. tiny.
Terra,	Dhará, 15,	earth,	W. daear, Ga. tir, Χωρα, Go. airtha, S. eard, A. arz.
Tonitru,	Stanyitnu, 2,	thunder,	τονω, S. thunar, P. tundar, G. donner.
Trans,	Trí,	across,	Go. thairh, G. durch, C. tros, R. czrez, Ga. thar, τρω.
Tres,	Trayas, 160,	three,	Go. thoreis, Li. trya, P. seh, τρια, R. tri, C. tri, S. threo.
Tuus,	Tvam,	thou,	G. deiner, R. twoi, Ga. do, Go. theins, Li. tawas, Ç. tau, W. dy.
Taurus,	Túvara,	bull,	W. tarw, Ga. tarbh, G. stier, Go. stiurs, H. tor, A. taur, ταυρος.
Tego,	Twach, 8,	cover,	G. decken, C. techu, τεγω, Li. dekis, Ga. tigh, W. ty, G. dach, R. dek, τευχος, S. thecan, protect.
Tundo,	Tud, 30,	wound,	θυσσω, G. tode, dead, F. tu, τυπω, Ga. tath, confusion.
Talentum,	Tulá,	gold measure, 14,	ταλαντον, G. zoll, toll, F. talent.
Terminus,	Tarma,	top,	Term, τερμα, Ga. teor, W. tervyn.
Tentam,	Tanti, 1,	expansion,	τεινω, Go. thania, G. dehne, tend, R. tianu, Li. tesiu.
Turget,	Tarjat, 3,	censure,	Turgid, οργω.
Talis,	Tulya, 8,	like,	τηλικος, retaiate.
Tueor,	Tej, 2,	guard,	τιω, tuition.
Terreo,	Trása, 8,	terror,	τρασσω L. tristes, G. trauer, Go. drobna, P. tars, [terrify.
Tollo,	Tul,	weigh,	G. dulde, Go. thula, ταλαω, H. thálá, toleration. [dins.
Tenebræ,	Tamas, 23,	darkness,	G. dammern, Li. tamsinu, R. temnost, dim, P. dihm, A.
Torreo,	Trish, 11,	thirst,	τεροσμαι, θερος, G. dürre, F. taris, Li. trokstu, Ga. tart.

LATIN.	SANSKRIT.	MEÁNING.	COGNATES.
Tondeo,	Tuḍ,	cut.	τενδων, τομειν, <i>tonsure</i> , <i>F.</i> tonsure.
Tumultus,	Tumula,	uproar,	<i>Tumultuous</i> , <i>L.</i> tumes.
Talus,	Tala, 8,	bottom,	ταλαν.
Tremo,	Dram,	move,	τρεμω, <i>tremor</i> , <i>F.</i> tremble.
Trudo,	Trut, 5,	break,	τρωω, <i>intrude</i> .
Trunco,	Trīh,	hurt, ●	τρυνχω, <i>truncated</i> , <i>G.</i> drücke, <i>Li.</i> drozu.
Turbo,	Thurv,	injure,	θορυβοος, <i>disturb</i> , <i>G.</i> trübe, <i>F.</i> trouble.
Tono,	Tan, 4,	sound,	τονος, <i>G.</i> tōne. <i>F.</i> tonne, <i>intonation</i> .
Ustus,	Ushnam, 42,	burn,	ηως, αυω, <i>combustion</i> , <i>H.</i> esh, <i>ashes</i> .
Uterus,	Uḍara, 13,	belly,	ουθαρ, <i>G.</i> euter, <i>udder</i> , <i>R.</i> utroba. [an.
Unitus,	Anwita, 1,	joined,	εις, <i>Go.</i> ains, <i>G.</i> einer, <i>one</i> , <i>R.</i> odn, <i>Ga.</i> aon, <i>C.</i> un, <i>S.</i>
Urgeo,	Urja, 7,	effort,	εργον, <i>work</i> , <i>urgent</i> , <i>G.</i> werk.
Uter,	Yatara,	whether,	<i>G.</i> oder, <i>either</i> , <i>R.</i> ieter, <i>ετερος</i> .
Umbra,	Abhram, 10,	cloud, -	<i>F.</i> ombre, <i>umbrageous</i> .
Ursus,	Riksha, 2,	a bear;	αρκος, <i>apascow</i> , <i>P.</i> khirs, <i>F.</i> ours.
Unda,	Uda, 43,	water,	υω, <i>Go.</i> wato, <i>Li.</i> wandu, <i>inundate</i> .
Un,	An, 217,	not,	αν, <i>Go.</i> un, <i>Ga.</i> an <i>C.</i> an, <i>aveu</i> , <i>G.</i> ohne, <i>L.</i> in, <i>R.</i> wnie.
Urina,	Vāri, 40,	water,	ουρον, <i>urinal</i> .
Utor,	Yat, 8,	persevere,	οθω, <i>use</i> , <i>F.</i> use.
Vacuo,	Vich, 20,	separate,	οιχομαι, <i>G.</i> weiche, <i>Go.</i> wiko, <i>F.</i> vague, <i>L.</i> vaco, <i>H.</i> [bāqaq.

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Volo,	Vlí,	choose,	ελω, <i>Go. willia, will, R. woliu, G. wahle, Li. weliju.</i>
Valeo,	Val, 17,	cover,	ελω, <i>wall, L. vallus, G. wohl, C. gwell, R. waliu.</i>
Vates,	Bhat̥ta, 33,	a sage,	υδης, <i>φαις, vaticinate, W. barth, Ga. bard, H. parat.</i>
Ve,	Vá,	or,	<i>H. vau, ouat.</i>
Veho,	Vah, 19,	carry,	οχλω, <i>G. wege, weigh, L. via, Li. wezu, R. wozd, S. weg.</i>
Venor,	Van, 1,	honor,	ονημι, <i>Go. unna.</i> [C. gwynt, <i>Go. wind.</i>
Ventus,	Váta,	wind,	ανης, <i>G. wind, Li. wejas, P. bad, Ga. gaoth.</i>
Verto,	Varta, 20,	turning,	<i>Go. wairda, C. wrth, ward, ερω, R. werzcu.</i>
Vestio,	Vastra, 18,	cloth,	<i>G. watte, εθης, need, Go. wasti, F. veste, vesture.</i>
Victus,	Vijitus, 6,	defeated,	<i>Victory, L. victima, F. victoire.</i>
Videre,	Vid, 109,	know,	<i>G. weiss, wil, C. wyddus, wizard, ιτωρ, R. wiedee.</i>
Vidua,	Vidhava, 2,	widow,	<i>L. viduus, εδιος, Go. authis, S. weodues, G. óde, P. biwa.</i>
Villa,	Palli, 2,	village,	<i>Li. pilis, Ga. baile, F. village, villa.</i>
Vieo,	Ve,	weave,	<i>Li. weju, ιρεα, R. wiilu.</i> [S. wær, <i>Li. wiras.</i>
Vir,	Víra, 35,	hero,	<i>C. wraig, Go. wair, Ga. fear, G. wehren, nar, H. gavar,</i>
Viridis,	Harita, 20,	green,	<i>L. herba, verdure, χορος, F. verdure, H. phera.</i>
Vita,	Vid, 109,	exist,	<i>βιων, vital, P. ziad, F. vitement.</i>
Vivo,	J'iv, 53,	life,	<i>W. byw, Ga. beo, Li. gywas, βιος, revive.</i>
Vox,	Vách, 34,	speak,	<i>ηχω, G. wasche, F. voix, R. weiszczaiu, invoke.</i>
Verres,	Váráha, 5,	boar,	<i>ερρωος, S. bar, R. barov, A. varaz P. baret.</i>
Vado,	Pad,	foot,	<i>πατω, made, οδευω, Go. itho, G. wate.</i>
Vello,	Vil, 1,	divide,	<i>ελω, Go. wilwa, revulsion.</i>

LATIN.	SANSKRIT.	MEANING.	COGNATES.
Vomitæ,	Vámita, 7,	vomit,	εμεω, <i>Li.</i> wemia, <i>H.</i> phum, <i>emetic.</i>
Vesper,	Váspa, 8,	vapor,	εσπερος, <i>vespers</i> , <i>R.</i> vetcher, <i>F.</i> vesperie.
Versus,	Vritta,	verse,	<i>Go.</i> wairtha, <i>rev-erse</i> , <i>L.</i> verito, <i>S.</i> færs.
Vetus,	Víta, 14,	gone,	<i>R.</i> wetchü, <i>F.</i> vieux, <i>inveterate</i> , ερος, <i>Ga.</i> eata, <i>L.</i> ætas.
Vigil,	Vij, 2,	active,	υγιανω, <i>L.</i> veges, <i>Go.</i> waka, <i>G.</i> wache, <i>wake.</i>
Verus,	Varyas, 2,	excellent,	<i>Li.</i> wiernas, <i>Ga.</i> fearf, <i>G.</i> wahr, <i>R.</i> wierny, <i>C.</i> gwir, <i>verity.</i>
Vorax,	Vpika, 8,	take,	<i>Worry</i> , <i>Li.</i> wilkas, <i>G.</i> würge, <i>H.</i> bagyar, βopa, <i>S.</i> worigeh.
Vereor,	Var,	select,	εραω, <i>Go.</i> weria, <i>G.</i> ehre, <i>R.</i> wierin, <i>reverence.</i>
Vario,	Varna, 49,	color,	<i>Variety</i> , <i>F.</i> variant.
Vitulus, 7,	Vatsa, 17,	calf,	ιταλος.
Vasto,	Vast, 3,	injure,	<i>Waste</i> , αταω, <i>G.</i> wüste, <i>F.</i> devaste.
Vagio,	Vásh, 2,	cry,	<i>H.</i> bekeh.
Vicus,	Vish,	dwell,	ουκος, <i>Go.</i> weihis, <i>Li.</i> wissas, <i>vicinity.</i>
Vago,	Vag,	go,	οχτω, <i>L.</i> vacilla, <i>nag</i> , <i>G.</i> wacklen, <i>F.</i> vague.
Vulcanus,	Ulká, 4,	fire,	<i>Volcano</i> , αλα,
Vieis,	Vich, 2,	interval,	<i>Go.</i> wio, <i>G.</i> woche, <i>R.</i> wick, <i>vicistude.</i> [virtuel.
Virtus,	Vṛitya,	excellent,	<i>apern</i> , <i>G.</i> werth, <i>Go.</i> wairtha, <i>Ga.</i> feart, <i>virtuous</i> , <i>F.</i>
Vanus,	U'na,	less,	ευς, <i>Go.</i> wans, <i>G.</i> wahn, <i>Li.</i> wienas, <i>aveu</i> , <i>vanity.</i>
Viginti,	Vinshati, 3,	twentieth,	<i>G.</i> zwanzig, <i>R.</i> dwadesiat, <i>Ga.</i> fchid, <i>C.</i> ugain.
Virgo,	Virá,	woman,	<i>Li.</i> wyrene, <i>C.</i> wraig, <i>virgin</i> , <i>F.</i> virginal.

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Ax,	Ashri,	edge of a sword,	<i>ακις</i> , <i>L.</i> acus, <i>G.</i> axi, <i>οξυς</i> , <i>S.</i> acse, <i>Li.</i> aseia.
Alley,	A'vali,	row,	<i>F.</i> allée.
Another,	Anyatara, 28,	other,	<i>C.</i> allan, <i>αλλος</i> , <i>G.</i> ander, <i>Li.</i> anas, <i>εννεος</i> , <i>G.</i> hinter.
Ape,	Kapi,	monkey,	<i>P.</i> kappi, <i>G.</i> affe.
Arrow,	Shara,	arrow,	<i>S.</i> arrene.
Away,	Ava,	from, "	<i>ου</i> , <i>L.</i> ve, <i>R.</i> wy, <i>ουχι</i> , <i>εμι</i> .
Ache,	Agha, 5,	pain,	<i>αχος</i> , <i>G.</i> ach, <i>C.</i> och, <i>S.</i> ace.
Bake,	Pakwa,	cooked,	<i>βεκκος</i> , <i>P.</i> pazad, <i>Ga.</i> bacalta.
Bask,	Bhaskara,	the sun,	<i>G.</i> backen.
Bath,	Vád, 4,	bathe,	<i>S.</i> bad, <i>βαπτω</i> , <i>Ga.</i> baidh, <i>R.</i> banya. [bio.]
Be,	Bhú, 127,	exist,	<i>φυω</i> , <i>W.</i> bu, <i>Ga.</i> bu, <i>P.</i> buden, <i>R.</i> bywain, <i>C.</i> bun, <i>S.</i> .
Beg,	Bhikshá, 17,	begging,	<i>πτωχης</i> , <i>L.</i> posco, <i>Li.</i> bedzius, <i>R.</i> ubogü.
Better,	Bhadra, 22,	-excellent,	<i>Ga.</i> bats, <i>G.</i> besser, <i>P.</i> bahtar, <i>S.</i> betre.
Bid,	Vad, 2,	speak,	<i>L.</i> peto, <i>Go.</i> bidia, <i>S.</i> biddan, <i>Ga.</i> bita, <i>W.</i> gwed.
Booty,	Bhaṭa,	soldier,	<i>βιαζω</i> , <i>F.</i> butin, <i>G.</i> beute.
Bold,	Vala, 5,	army,	<i>L.</i> polleo, <i>G.</i> bald.
Bray,	Brú,	speak,	<i>βρωω</i> , <i>L.</i> burrio, <i>G.</i> brause, <i>F.</i> bruia.
Brother,	Bhrátri,	brother,	<i>φρατηρ</i> , <i>L.</i> fraier, <i>S.</i> broder, <i>βρωω</i> , <i>G.</i> bruder.
Brow,	Bhrú,	eyebrow,	<i>οφρυς</i> , <i>S.</i> browa, <i>Ga.</i> bruach.
Bald,	Palit,	grey-haired,	<i>πολιος</i> , <i>L.</i> palleo, <i>Li.</i> baltas, <i>R.</i> bielyi.
Bit,	Bhid,	split,	<i>Bati</i> , <i>φαζω</i> , <i>L.</i> fodio, <i>G.</i> beisse, <i>F.</i> fends, <i>A.</i> bit, <i>S.</i> bita.
Bend,	Bhugūa;	bowed,	<i>L.</i> pandus, <i>S.</i> bendan, <i>P.</i> bandan.

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Bride,	Bhárjya,	wife,	παρθη, <i>L.</i> parta, <i>Go.</i> braths, <i>G.</i> braut, <i>F.</i> bru.
Bind,	Bandha, 25,	fasten,	πένδαω, <i>F.</i> pedio, <i>Go.</i> bandi, <i>G.</i> binde, <i>P.</i> bandah, <i>H.</i> [eddu. abhnet.
Beat,	Bádth 7,	oppose,	παττω, βακτρον, <i>L.</i> batuo, <i>Li.</i> badau, <i>R.</i> bodu, <i>C.</i> ba-
Buck,	Bukka,	goat,	βηκον, <i>G.</i> bock, <i>C.</i> bwch, <i>buck</i> , <i>F.</i> bouc.
Bleat,	Valh,	speak,	βληχhaw, <i>L.</i> balo, <i>G.</i> blöke, <i>Li.</i> blauju, <i>R.</i> bleiu.
Bow,	Bhuj, 33,	bend,	πτυσσω, <i>C.</i> bachu, πνζ, <i>G.</i> bogen, <i>Go.</i> biuga.
Break,	Bhrash,	fall,	<i>L.</i> frango, <i>Go.</i> brika, <i>G.</i> breche, <i>πριζω</i> .
Blaze,	Bhlásh,	shine,	<i>L.</i> fulgeo, φλεζω, <i>Li.</i> blizgu, <i>S.</i> blase.
Bad,	Vádth,	give pain,	<i>L.</i> pestis, <i>G.</i> bös, <i>Li.</i> beda, <i>R.</i> bies, <i>F.</i> pis, <i>S.</i> beado, <i>P.</i>
Blow,	Phull,	flower,	<i>G.</i> bhülhe, φlaw, <i>L.</i> flo.
Bang,	Bhanj,	break,	<i>Go.</i> brikán.
Carve,	Charv,	eat,	<i>L.</i> carpo, καρπιζω, <i>G.</i> kerbeen, <i>Li.</i> kerpu.
Caw,	Káváda,	indistinct sound,	χaw.
Champ,	Cham,	eat,	καπτω, <i>F.</i> champayer.
Chant,	Gána,	song,	<i>L.</i> cantus, <i>accent</i> , <i>C.</i> canu, <i>Ga.</i> canam, <i>W.</i> kan.
Churn,	Chúrna 15,	grind,	γυρωμα, <i>S.</i> cerene.
Coal,	Kála, 86,	black,	<i>L.</i> caleo, <i>G.</i> kohle, <i>S.</i> col, <i>H.</i> gachel, <i>La.</i> gual, <i>R.</i> ugol.
Come,	Gam, 18,	go,	κομεω, <i>Go.</i> quima, <i>G.</i> komme.
Coo,	Ku, 1,	cry as a bird,	
Cottage,	Kuti, 24,	house,	<i>L.</i> casa, hut, <i>C.</i> cwt, κοιτη, <i>κευθω</i> , <i>Ga.</i> cot.
Cow,	Gao, 112,	cow,	<i>G.</i> kuh, <i>L.</i> ceva, <i>P.</i> gav, <i>S.</i> cu, <i>H.</i> gagyah, <i>Ga.</i> ceo.

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Crow,	Karata,	crow,	κοραῖζ, <i>L. corvus, G. krähe R. grac.</i>
Cud,	Kḍu,	eat,	<i>S. cud, chewed.</i>
Chin,	Hanu, 5,	jaw,	γενυς, <i>G. kinn, Go. kinnus, P. chánah-</i>
Carry,	Char, 24,	go,	<i>L. curro, ὕρω, chair, S. cyran, car.</i>
Chalice,	Kalasha,	water jar,	κυλιῖζ, <i>L. calix, F. calice, S. calie.</i>
Curl,	Kurula,	lock of hair,	γυρος, <i>S. cyran.</i>
Comely,	Komala, 3,	beautiful,	κοσμος, <i>L. comis, S. cweman.</i>
Cull,	Khal,	gather,	<i>F. cueillir, collect, λεγω.</i>
Cheat,	Chāta, 4,	rogue,	<i>F. acheter, S. cetta.</i>
Cool,	Jala,	cold,	<i>L. gelu, G. kalt, L. szaltas, chíll, F. gele, R. cholozu.</i>
Cut,	Kvit, 4,	cut,	<i>L. quatio, G. kutte, C. cadu, R. kroiu, Li. kertu, cárd.</i>
Cough,	Kāsa, 6,	cough,	κοιζω, <i>G. keiche, Li. kostu, R. kaszlau.</i>
Chuckle,	Kakkh, 2,	laugh,	καχαζω, <i>L. cachinnor, G. kichele. R. chikaiu.</i>
Cry,	Kur,	sound,	<i>G. krähen, C. criu, L. queror, καρω, F. erie.</i>
Carp,	Krip,	weak,	<i>L. carpo, G. kerbe, καρπιζω.</i>
Chop,	Chap, 2,	pound,	κοπτω, <i>G. kappe, F. coupe, Li. kapoiu, R. kopaiu.</i>
Camel,	Kramela,	camel,	καμηλος, <i>G. kamel, L. camelus, F. chameau, H. gámál.</i>
Cock,	Kukkuta, 2,	cock,	<i>C. cok, κικκος, G. göekel, R. koczet.</i>
Cuckoo,	Kokila, 4,	cuckoo.	κοκκυζ, <i>G. guckuck, L. cuculus, R. kokuska.</i>
Claw,	Kuli,	hand,	χυλη, <i>G. klaue.</i>
Censor,	Dhwans, 6,	calumniate,	<i>G. sinne, κηνσος, censure, H. kásas.</i>
Cup,	Kúpi, 3,	bottle,	κυφος, <i>G. kufe, C. cib, L. cymba, coop, R. kub.</i>
Char,	Chur,	burn,	ξηρος.

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Dame,	Dam,	wife,	ῥαμαρ, <i>L.</i> domina, <i>F.</i> dame.
Dale,	Dal,	division,	<i>G.</i> theile, <i>R.</i> dieliu, <i>Li.</i> dallyiu, <i>Go.</i> dailia.
Damp,	Dhúma, 22,	smoke,	θυμος, <i>G.</i> dampf, <i>Li.</i> dussa, τυφος.
Dare,	Dhrish, 11,	confident,	<i>Go.</i> dar, <i>G.</i> traue, <i>Li.</i> drystu, <i>R.</i> derzai.
Daughter,	Duhitri, 2,	daughter,	θυγατηρ, <i>Li.</i> dukti, <i>P.</i> dokhter, <i>G.</i> tochter, <i>R.</i> docza.
Dead,	Tud,	kill,	θανω, <i>Go.</i> dauhts, <i>G.</i> todt, <i>Go.</i> todhas, <i>R.</i> dad, <i>S.</i> dydan.
Deal,	Dal, 25,	divide,	Ολλω, <i>G.</i> theil, <i>Li.</i> dalis, <i>C.</i> tylla, <i>dole</i> , <i>S.</i> dælan, <i>Go.</i> dailim, <i>H.</i> dal.
Doubt,	Dwaidha,	two ways,	<i>L.</i> dubius, <i>F.</i> doubt, <i>Go.</i> dubhátai.
Drive,	Tarv,	move,	τρεπω, <i>L.</i> trepido, <i>Go.</i> drieba, <i>G.</i> treibe.
Dug,	Dugdha, 13,	milk,	<i>C.</i> degga.
Dupe,	Dambha,	deceit,	<i>F.</i> dupe.
Dust,	Tústa,	dust,	<i>S.</i> dust, <i>Go.</i> duust.
Daunt,	Dánta, 2,	subjection,	<i>F.</i> dompter, <i>L.</i> domitare, δεματω.
Dash,	Dásh,	hurt,	δαζομαι, <i>H.</i> dush.
Dim,	Tamas, 30,	darkness,	<i>G.</i> dämmere, <i>L.</i> tenebræ, <i>S.</i> dim, <i>P.</i> damah, <i>Go.</i> deimhe, [<i>R.</i> dium.
Druid,	Dhíra, 14,	wise,	<i>S.</i> drua, <i>Go.</i> druith.
Dip,	Tip,	sprinkle,	δυπω, <i>G.</i> taufe, <i>S.</i> dippan, <i>dive</i> , <i>R.</i> topnu, <i>dip</i> .
Dad,	Tátá, 5,	father,	<i>C.</i> tád, <i>W.</i> lát, τετρα, <i>L.</i> tata, <i>L.</i> tewas, <i>R.</i> tiatia, [<i>H.</i> dod.
End,	Anta, 37,	final,	<i>G.</i> ende, <i>Go.</i> andeis, <i>S.</i> ende.
Ewe,	Avi, 2,	sheep,	<i>L.</i> ovis, οἶς, <i>Go.</i> avi, <i>R.</i> ovtsa, ovation, <i>S.</i> ewa. [oculus.
Eye,	Akshi, 10,	eye,	<i>G.</i> auge, <i>C.</i> aug, <i>Go.</i> augo, <i>R.</i> oko, <i>S.</i> eage, αυγη, <i>L.</i>

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
East,	U'shá, 42,	daybreak,	εως, <i>S. east, Ga. heos, G. ost.</i>
Even,	Iva,	even,	<i>G. ebung, Ga. e, yea, R. ei, G. ja, L. jam, Go. ja</i>
First,	Purastát,	before,	πρῶτος.
Five,	Panchan, 100,	five,	<i>S. fíf. L. pente, P. punge, R. pyate, C. pump.</i>
Flee,	Paláy, 20,	retreat;	<i>G. fliehen, πλεω.</i>
Flood,	Pluta,	plunge,	πλωτος, <i>G. flüss, Ga. fluch, R. plywre, Li. plajju.</i>
Foal,	Pál,	cherish,	πωλος, <i>Go. fula, S. fula.</i>
Foot,	Pad, 106,	foot,	ποταω, <i>S. fot, Ga. fuidh, G. pfote.</i>
Feud,	Yudh, 17,	war,	<i>S. fedh, foe.</i>
Far,	Pára,	end,	πορρω, <i>S. feor, Ga. fatt.</i>
Fan,	Váyu,	wind,	<i>L. vannus, winnow, R. viefyanie.</i>
Fell,	Phal, 1,	split,	βαλλω, <i>G. fellen, H. yipel.</i>
Find,	Vind, 1,	find,	<i>S. findan, G. befinden.</i>
Foam,	Phena, 11,	froth,	<i>S. fam, L. fumus, θυειν.</i>
Gad,	Gata,	gone,	κτω, <i>L. cio, Go. ganga, G. geh.</i>
Glad,	Hlád, 3,	delight,	χλω, <i>G. geil, P. shed, L. hilaro, S. glæd.</i>
Glout,	Gláyat,	exhausted,	<i>Glee, S. gligge.</i>
Gloom,	Gláni,	languor,	<i>S. glomang, L. lumen.</i>
Go,	Gá,	go,	κτω, <i>Go. ganga, L. cio, G. gehe, R. chozu, W. camu.</i>
Greedy,	Gridh, 6,	desire eagerly,	-χρω, <i>L. quæro, G. gehre, Go. gredo, Li. gardus.</i>
Grave,	Gaurava, 33,	heavy,	<i>L. gravis, F. grave, R. pogebræue.</i> [gripper.
Gripe,	Grah, 78,	seize,	γρω, <i>G. gréifen, P. géritfen, Go. gréipan, S. gripon, F.</i>

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Grunt,	Garjana, 8,	deep sound,	<i>L.</i> grunnio, <i>S.</i> gremnian.
Gullet,	Gala, 11,	throat,	<i>L.</i> collum, <i>G.</i> kehle, <i>L.</i> gula, <i>P.</i> galu, <i>R.</i> glotaiu.
Graze,	Gras,	eat,	<i>γρᾶω</i> , <i>Li.</i> grauzu, <i>R.</i> gryzu, <i>S.</i> grasian, <i>G.</i> gras, <i>P.</i> gryah.
Gush,	Ghas,	sprinkle,	<i>χυσαι</i> , <i>G.</i> giesen, <i>H.</i> gáash.
God,	Shudh, 18,	pure,	<i>κασθεις</i> , <i>L.</i> castus, <i>S.</i> god, <i>G.</i> gott.
Glow,	Jwal, 14,	burning,	<i>κηλωω</i> , <i>G.</i> glühe, <i>Li.</i> szylu, <i>R.</i> kalu, <i>F.</i> chaleur.
Gorge,	Kṛika, 8,	throat,	<i>L.</i> gorges, <i>γαργαρεων</i> , <i>gurgyle</i> , <i>G.</i> gurgel, <i>R.</i> gorlo.
Gate,	Ghaṭṭa,	ghat,	<i>Go.</i> gatwo, <i>G.</i> gasse, <i>R.</i> chod.
Great,	Kṛita,	sufficient,	<i>G.</i> gross, <i>S.</i> great.
Grist,	Ghrishta, 4,	ground,	<i>S.</i> grist.
Hall,	Shálá, 9,	hall,	<i>αυλη</i> , <i>L.</i> cella, <i>κολεος</i> , <i>G.</i> halle, <i>hull</i> , <i>R.</i> kelia, <i>R.</i> [zala.,
Have,	A'p, 8,	obtain.	<i>απτω</i> , <i>L.</i> apiscor, <i>G.</i> haben, <i>S.</i> habban. [<i>criodhe.</i>
Heart,	Hṛid, 27,	heart,	<i>Go.</i> hairto, <i>G.</i> herz, <i>Li.</i> szirdis, <i>καρδια</i> , <i>R.</i> serdce, <i>Ga.</i>
Hie,	Hay, 1,	move,	<i>κτω</i> , <i>L.</i> eo, <i>S.</i> hiegan.
Ho,	Há,	ha,	<i>L.</i> eho. [<i>W.</i> osw, <i>Z.</i> aspo.
Horse,	Ashwa, 50,	horse,	<i>Ga.</i> each, <i>P.</i> ash, <i>G.</i> ross, <i>Li.</i> azwa, <i>ικκος</i> , <i>F.</i> hacque,
Hurt,	Aṛdati, 1,	pain,	<i>F.</i> heurter, <i>S.</i> hyrt. [<i>hus</i> , <i>P.</i> kad.
Hut,	Kut, 1,	house,	<i>κευθος</i> , <i>G.</i> hütte, <i>R.</i> kutain, <i>C.</i> cuddiu, <i>L.</i> casa, <i>Go.</i>
Hit,	Hata, 54,	struck,	<i>L.</i> ictus, <i>Go.</i> hintha, <i>κεντεω</i> .
Heat,	Iddha, 3,	blazing,	<i>αιθος</i> , <i>G.</i> heiss, <i>L.</i> æstus, <i>Ga.</i> aodh, <i>C.</i> éte.
Hide,	Kuḍi, 35,	body,	<i>L.</i> cutis, <i>σκυρος</i> , <i>G.</i> haut, <i>coat</i> .
Hiss,	Hása, 8,	laughter,	<i>σιζω</i> , <i>S.</i> hircean.

ENGLISH.	SANSKRIT.	MEANING.	COGNATES
Harry,	Hṛī, 7,	seize,	<i>F. harer, S. hergian.</i>
Hate,	Haṭha, 4,	violence,	<i>κοτεων, G. hassend, Go. hatands, F. hais, arn, S. ade.</i>
Horn,	Śrīṅga, 10,	horn,	<i>κορων, L. cornu, Go. hauru, G. horn, H. qeren.</i>
Hand,	Hasta, 11,	hand,	<i>G. hand, Go. handus, P. dast, G. tasten,</i>
Hilarity,	Hil, 1,	dally, •	<i>χλιω, ιλαρος, L. hilaris.</i>
In,	Ni,	within,	<i>εν, L. in, Go. in, G. in, Li. i, C. yn.</i>
It,	Etad,	it,	<i>L. id.</i>
Joke,	Jaksh,	laugh,	<i>ιαχω, G. juchze, Li. jukin, L. jecor, F. joue, H. tsáchak.</i>
Jabber,	Jap, 14,	mutter,	<i>Gíbbérish, P. ghab, S. gabban.</i>
Joy,	Jush, 5,	pleasure,	<i>γηθος, L. gaudeo, Go. kiusa, F. gai, H. tsáhal.</i>
Keep,	Gup, 35,	hide,	<i>σκεπω, cap, L. capio, G. hebe, Li. kaupoiu, R. kopliu.</i>
Kiss,	Kush,	embrace,	<i>κυω, Go. kukia, W. cusanu, G. küss.</i>
Knit,	Nah,	bind,	<i>νεω, L. nodus, net, C. neut, R. nit, G. naht, S. gnittan.</i>
Kin,	Jana, 95,	mankind,	<i>Go. kuni, Li. gymis, kind.</i>
Lazy,	Alasa, 4,	idle,	<i>χαλαζω, L. laxus.</i>
Less,	Leshi, 5,	lessen,	<i>λιαζω, lose, Go. lusa, G. letz, R. liszaiu, Li. liekmi.</i>
Lick,	Lih, 6,	lick,	<i>λειχω, L. lingo, Go. laigo, G. lecke, Li. lezu, R. lizu,</i>
Light,	Laghu,	light,	<i>Go. lighau.</i>
Lock,	Lagna,	joined to,	<i>Go. laika, L. leger, G. leicht, R. letaiu.</i>
Look,	Lok, 9,	see,	<i>S. loc.</i>
			<i>λευσσω, W. lhygad.</i>

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Lop,	Lup, 20,	cut,	<i>Li. luppu</i> , λεπτος, λωβη, <i>R. lupliu</i> . [<i>P. laheb.</i>
Love,	Lubb, 7,	desire,	<i>G. liebe</i> , <i>S. Iuvian</i> , <i>R. liubliu</i> , <i>Go. liebia</i> , <i>Li. lubiju</i> ,
Luck,	Lakshmi,	fortune,	λευκος, <i>G. glücke</i> , <i>lucky</i> .
Lust,	Lása,	embrace,	λαυω, <i>L. lætor</i> , <i>Go. lusto</i> , <i>G. lüste</i> , <i>S. lust</i> , <i>P. lustan.</i>
Leaven,	Lavana, 4,	salt,	<i>F. levain</i> , <i>leaven</i> .
Loll,	Lal, 41,	desire,	λιλατω.
Loose,	Lush, 9,	cut,	λειτω, <i>L. laxo</i> , <i>Go. lausia</i> , <i>Li. lauzu</i> , <i>R. lozzu</i> , <i>G. löse</i> ,
Leap,	Lep,	approach,	<i>G. laufe</i> , <i>Go. laupa</i> .
Lake,	Luch, 11,	cut,	<i>L. laqus</i> , <i>G. loch</i> , <i>C. llwch</i> , <i>R. luza</i> , <i>lough</i> , <i>F. lac</i> .
Like,	Lak, 1,	mark,	<i>Go. leiks</i> , <i>like</i> , λίκος, <i>G. lich</i> , <i>Li. lygus</i> .
Mad,	Mad, 67,	fool,	ματια, <i>G. matte</i> .
Man,	Mánusha, 11,	man,	<i>C. mon</i> , <i>L. mas</i> , <i>G. mensch</i> , <i>R. muz</i> , <i>Go. manna</i> , <i>Z.</i>
Mead,	Madhu, 32,	intoxicate,	μεθυ, <i>melheglin</i> , <i>W. medh</i> , <i>G. meth</i> , <i>C. medd</i> .
Meal,	Mil,	mix,	ομιλια, <i>S. male</i> , <i>R. meliu</i> .
Mean,	Man,	mind,	μενοινωω, <i>G. meinen</i> , <i>Ga. mien</i> , <i>R. mniu</i> , <i>A. manwi</i> .
Month,	Mása, 11,	month,	μην, <i>Ga. mios</i> , <i>R. miesiac</i> , <i>Li. menu</i> , <i>G. monath</i> .
More,	Mahattara,	greater,	<i>S. mare</i> , <i>L. major</i> , <i>Ga. mor</i> , <i>Z. mae</i> , <i>A. emir</i> , <i>W. mawr</i> .
MurRAIN,	Marana, 2,	dying,	μαρανω, <i>L. mori</i> .
Mud,	Mṛid,	soil,	μυδαω.
Matter,	Mátrā, 2,	substance,	<i>L. materia</i> , <i>F. materiel</i> .
Maid,	Mahilā,	female,	<i>Go. maevi</i> , <i>G. magd</i> .
Member,	Marman, 5,	joint,	μερος, <i>F. membre</i> .

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Mouth,	Mukh, 36,	mouth,	G. mund, Go. munths, F. museau, <i>μῦτις</i> , S. median.
Mark,	Maryá, 1,	limit,	Go. marka, G. mark, <i>Lí. miera</i> , C. marc, <i>R. miera</i> , <i>μερος</i> .
Mill,	Maṇa, 2,	grinding,	<i>μύλη</i> , L. mola, G. wühle, <i>Ga. muileann</i> , C. melin, <i>R.</i> [meliu.]
March,	March,	go,	G. marschirn, F. marcher.
Male,	Mála, 1,	man,	L. masculus, F. masculin.
Mate,	Mith,	associate,	<i>Meet</i> , <i>μετα</i> .
Nail,	Nakha, 27,	nail,	<i>ονυξ</i> , G. nagel, <i>Lí. nagas</i> , P. nakhan, L. unguis, <i>R. nogot</i> .
Naked,	Nagna, 9,	naked,	L. nudus, <i>Lí. nogas</i> , Go. naquaths, G. nacket, <i>R. nagü</i> .
Neat,	Nad, 1,	shine,	Go. nasia, L. niteo, G. nett, F. net. [dus, C. nes.]
Nigh,	Nah, 2,	join,	G. nach, Go. nehwa, C. nessu, L. nexus, <i>νηθω</i> , L. no-.
No,	Ná, 11,	not,	<i>W. na. νη</i> , L. ne, G. nein, <i>Lí. ne</i> , <i>Ga. nach</i> , G. nicht, P. nah, R. ne, S. no.
Nor,	Nir, 281,	no,	
Nose,	Násá,	nose,	G. nase, <i>Lí. nosis</i> , R. nos, S. nez, S. nose.
Now,	Nu,	now,	L. nunc. Go. nu, <i>Ga. nois</i> , <i>νυν</i> , R. nynie, P. nun, S. nu.
Nod,	Nata,	shake,	<i>κνωσσω</i> , <i>νευω</i> , L. nuto, <i>W. amneidis</i> .
Nave,	Nábhi,	wheel,	<i>ομφαλος</i> , G. umbo, G. nabe.
Neath,	Nícha,	low,	G. nieder, <i>Lí. nú</i> , R. niz.
Navel,	Nábhíla,	navel,	G. nabel, <i>ομφαλος</i> , F. nombril, L. umbelicus, P. naf,
Nest,	Níḍa, 2,	nest,	<i>Ga. nead</i> , C. nith, <i>ναος</i> , G. nest.
Oar,	Arittra,	rudder,	S. are, L. aro.

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Oh,	Háh, 5,	O !	O.
One,	Jana, 95,	person,	οιον, <i>L. unus, unity, F. un.</i>
Ooze,	Ghas,	sprinkle,	<i>F. eaux, S. wæz. H. auts.</i>
Other,	Itara,	other,	<i>S. oder, F. autré, L. alter, H. ádar. ετсроς.</i>
Otter,	Uda,	water,	<i>S. oter, L. lutra.</i>
Over,	Upari, 5,	above,	<i>L. super, Go. ufar, H. ávar.</i>
Owl,	Ulúka,	owl,	<i>L. ulula, ολολυγων, G. eule, howl.</i>
Ox,	Ukshan, 2,	ox,	<i>W. yeh. Ga. agh, L. vacca, Co. auhs, G. ochs S. oxa.</i>
Opium,	Aphena,	opium,	οπιον, <i>P. afun, οπος.</i>
Outer,	Uttar, 66,	posterior,	<i>S. ut, ωθεω.</i>
Pass,	Pes,	move,	πεταω, <i>F. passer, L. passus.</i>
Plunge,	Plu,	submerge,	πλυνειν, <i>F. plonger.</i>
Prayer,	Prárhana,	asking,	φραστωρ, <i>F. precor, G. sprechen, R. proszu, Li. praszau.</i>
Proud,	Pradhrishta,	arrogant,	<i>S. pride.</i>
Pot,	Put, 7,	vessel,	ποτος, <i>pottage.</i>
Push,	Push, 1,	rear,	<i>F. pousser.</i>
Pretty,	Príta, 11,	satisfied with,	<i>L. fruor, S. præd.</i>
Paw,	Pan,	the hand,	<i>L. puto, W. pawen.</i>
Path,	Pathin, 9,	road,	<i>L. spatium, πατος, G. pfad, R. put, F. pas, L. passus,</i>
Pile,	Pul,	heap up	πλεω, <i>Li. pillu, F. pile.</i>
Pawn,	Pana, 13,	bet,	πουνη, <i>L. pensum, G. pfand, Li. pantas.</i>
Pound,	Pund,	grind,	<i>L. pinso, Li. paisau, πτισσω.</i>

[S. poeth, P. pay.

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Quoth,	Katha, 20,	say,	Go. quitha, <i>L.</i> cedo.
Quill,	Kalama, 3,	reed,	<i>L.</i> culmus, <i>P.</i> kalam.
Queen,	Jāni,	• female,	γυνή, <i>C.</i> cena, <i>Go.</i> quens.
Quick,	Shak, 14,	power,	<i>G.</i> quicke, <i>Go.</i> quivs, κικυων.
Rage,	Rajas,	passion, •	<i>L.</i> rabies, <i>G.</i> rasen, <i>παγα</i> , <i>H.</i> rágan.
Have,	Ráva,	noise,	<i>F.</i> rever, <i>L.</i> rabies, <i>G.</i> rufe, <i>R.</i> rewu, <i>ποιβδος</i> .
Read,	Rádha, 2,	speak,	<i>S.</i> redan, <i>παζω</i> , <i>Go.</i> rodia, <i>G.</i> rede, <i>R.</i> reszezi, <i>C.</i> reithu.
Red,	Rohita, 4,	red,	<i>L.</i> russus, <i>G.</i> roth, <i>Li.</i> ruddas, <i>Ga.</i> ruadh, <i>C.</i> rhuddh,
Reign,	Rájan,	sovereign,	<i>L.</i> regnum, <i>F.</i> regne, <i>H.</i> raah, <i>S.</i> regn. [<i>ερευθος</i> , <i>R.</i> rumen.
Root,	Rad, 10,	root,	<i>ριζα</i> , <i>L.</i> radix.
Rude,	Ruksha, 2,	harsh,	<i>ρυσσος</i> , <i>L.</i> raucus, <i>G.</i> rauh. <i>F.</i> rauque, <i>rough</i> .
Racy,	Rasa, 53,	flavor,	<i>L.</i> ros, <i>εσση</i> .
Reach,	Rag,	obtain,	<i>Go.</i> rika, <i>Ga.</i> racham, <i>ρογεω</i> , <i>G.</i> reiche, <i>P.</i> rasad.
Ray,	Ruchi,	ray,	<i>L.</i> radius, <i>F.</i> rayon.
Row,	Ráji, 2,	line,	<i>G.</i> reihe.
Run,	Riṇa, 2,	oozing,	<i>παυω</i> , <i>G.</i> rinnend, <i>Go.</i> runnans. <i>R.</i> rownoi.
Sake,	Sakhi,	friend,	<i>S.</i> sac, <i>G.</i> sache. •
Same,	Sama, 550,	similar,	<i>αμα</i> , <i>Go.</i> samo.
Seam,	Síman,	limit,	<i>G.</i> saum, <i>S.</i> seam.
Sew	• Svana,	sew,	<i>Li.</i> sutas, <i>L.</i> satus, <i>Go.</i> sajja, <i>G.</i> sae, <i>R.</i> sieiu.
She,	Sá,	she, •	<i>Go.</i> si, <i>S.</i> seo, <i>R.</i> ta.
Sign,	Sajoná,	sign,	<i>F.</i> signe, <i>L.</i> signum, <i>σημειον</i> , <i>S.</i> segen.

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Sister,	Swasrī,	sister,	L. soror, <i>Go.</i> swistar, <i>Li.</i> sessû, <i>R.</i> sestra, <i>C.</i> chwaer, <i>G.</i> [schwester.
Speech,	Vâch,	voice,	<i>S.</i> spekan.
Son,	Sûnu, 3,	son,	<i>Go.</i> sunus, <i>G.</i> sohn, <i>Li.</i> sunus, <i>R.</i> syn, <i>ινος.</i>
Shear,	Kshura, 11,	razor,	<i>G.</i> scherer, <i>Li.</i> skirras, <i>Ξυρος, κουρευς, S.</i> sunu.
Spy,	Spasha, 5,	see,	<i>L.</i> specio, <i>G.</i> spâltten, <i>Li.</i> spegas, <i>σκοπος, F.</i> espion.
Stall,	Sthala, 10,	place,	<i>G.</i> stelle, <i>στέλλω, Li.</i> stelloju, <i>R.</i> steliu.
Stun,	Stan, 2,	groan,	<i>στένω, G.</i> stohnen, <i>Li.</i> stenu, <i>R.</i> steniu.
Sum,	Sama,	whole,	<i>L.</i> summus, <i>F.</i> somme, <i>G.</i> sammle, <i>συν, Go</i> sama.
Sweat,	Sweda,	sweat,	<i>ιδος, L.</i> sudor, <i>G.</i> schweiss, <i>F.</i> sueur, <i>seethe.</i>
Sweet,	Swadu, 20,	dainty,	<i>ηδύς, G.</i> süß, <i>L.</i> suavis, <i>Li.</i> saldus, <i>R.</i> sladok, <i>W.</i> chwys.
Sugar,	Sharkará,	sugar,	<i>σακχαρ, L.</i> sachharum, <i>P.</i> shakar, <i>G.</i> zucker.
Suck,	Sechana,	drip.	<i>Li.</i> sunkiu, <i>L.</i> sugo, <i>G.</i> sauge, <i>P.</i> chusad, <i>R.</i> sositu, <i>H.</i> [shaqah.
Scour,	Kshur,	scratch,	<i>σκωρ, G.</i> schur.
Scar,	Khárin,	scar,	<i>Χαραττω, S.</i> sciran, <i>εσχαπα.</i>
Sad,	Sáda,	exhaustion,	<i>S.</i> suht, <i>P.</i> seton.
Soup,	Súpa,	broth,	<i>σιφωνίζω, S.</i> sipan, <i>sop.</i> [H. sak.
Sail,	Sel,	move,	<i>W.</i> huyl, <i>Ga.</i> séol, <i>S.</i> sægian, <i>A.</i> sayl. [<i>H.</i> sak, <i>G.</i> sack,
Sack,	Sajja,	clothed,	<i>σαγν, L.</i> saccus, <i>Li.</i> sakas, <i>C.</i> sach, <i>R.</i> sak, <i>G.</i> sack.
Stem,	Stambha,	stalk, 13,	<i>στυμιος, L.</i> stipes, <i>Li.</i> stambas, <i>R.</i> stebel, <i>G.</i> stab.
Stop,	Stbha, 2,	obstruct,	<i>σπειβω, L.</i> stipō, <i>G.</i> stopfe, <i>Li.</i> stimpu, <i>R.</i> stupaiu.
Sinew,	Snáyu,	muscle,	<i>ινες, S.</i> senwe.
Sorrow,	Swrī,	pain,	<i>Sore, Go.</i> saurgan, <i>S.</i> sorgian.
Syrup,	Suráp,	vinous liquor,	

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Swell,	Sphul,	expand,	<i>S.</i> svellan.
Sir,	Sri, 52,	respect,	<i>F.</i> sire, <i>L.</i> senior.
Sun,	Súnu,	sun,	<i>G.</i> sonne, <i>Go.</i> sunna, <i>R.</i> solnee, <i>C.</i> huan.
Shrub,	Suráp,	drinking spirits,	<i>L.</i> sorbeo, <i>A.</i> sariba. ποφειω.
Smile,	Smi, 3,	smile,	<i>G.</i> schmiele, <i>R.</i> smieu, μειδαω.
Scathe,	Skhad, 2,	destroy,	σκεδαω, <i>G.</i> shade, <i>Go.</i> skathia, <i>Li.</i> skaustu.
Snow,	Snav, 2,	oozing,	<i>Go.</i> snaiwa, <i>G.</i> schnee, <i>Li.</i> snegas, <i>Ga.</i> sneachd, <i>R.</i> snieg, νιξ, <i>L.</i> nix.
Sow,	Shúkara,	hog	συς, <i>L.</i> sus, <i>G.</i> sau, <i>R.</i> swinia, <i>W.</i> hweh.
Stow,	Styai,	crowd,	<i>G.</i> staue, στνω.
Seed,	Súti, 7,	bringing forth,	<i>Go.</i> setho, <i>G.</i> saat, <i>C.</i> had, σειω, <i>Li.</i> seju.
Shell,	Chála,	thatch,	<i>G.</i> schale, shield, σκυλος.
Steer,	Sthira,	bull,	<i>G.</i> stier, <i>Go.</i> stiurs, ταυρος.
Skill,	Shíla,	versed in,	<i>L.</i> calleo, <i>W.</i> call, σχολη.
Steam,	Stema,	moisture,	ατμη, <i>S.</i> steme.
Star,	Tárá,	star,	<i>L.</i> stella, <i>Go.</i> stairno, <i>W.</i> seren, <i>G.</i> stern, <i>P.</i> sitarah, <i>S.</i> [steorra.
Tear,	Drí,	pull,	τερην, <i>L.</i> tener, <i>S.</i> teran, <i>P.</i> tarakidan, <i>R.</i> deri.
Teat,	Dayita,	beloved,	τιρθος, <i>W.</i> teth, <i>S.</i> tit, <i>F.</i> teton.
That,	Tad, 40,	it,	<i>G.</i> das, το <i>Ga.</i> so, <i>H.</i> so.
Thirst,	Trish, 11,	thirst,	τερσια, <i>G.</i> durst, <i>Li.</i> trokstu, <i>P.</i> tarzad, <i>L.</i> torrea.
Thou,	Twam,	thou	<i>Ga.</i> tu, <i>R.</i> ty, <i>G.</i> du, <i>C.</i> ti, <i>P.</i> tu, συ, <i>Li.</i> tu, τυ, <i>Go.</i> thu.

ENGLISH.	SANSKRIT.	MEANING.	COGNATES.
Toss,	Tas,	throw,	ταΐζω, <i>F.</i> tasser, <i>θεωσαι</i> .
T'other,	Tatara,	the other,	
Tree,	Taru, 20,	tree,	δρυς, <i>Go.</i> triu, <i>R.</i> drewo, <i>Ga.</i> doire, <i>C.</i> dar.
Through,	Tri,	pass,	<i>G.</i> durch, <i>S.</i> durr.
True,	Dhruva, 3,	fixed,	δηρος, <i>Go.</i> trigws, <i>G.</i> treu, <i>L.</i> durus, <i>G.</i> daure, <i>C.</i> tariu.
Tune,	Tána,	tune,	<i>G.</i> töne, <i>din</i> , <i>L.</i> tonus, <i>C.</i> ton, <i>δανεω</i> .
Touch,	Twach, 8,	cover,	θιγγω, <i>L.</i> ictus.
There,	Tatra,	-there,	<i>Go.</i> thatro, <i>G.</i> dar, <i>S.</i> dær.
Thought,	Dhyáta, 5,	meditate,	<i>G.</i> deñke, <i>Go.</i> thankia, <i>Li.</i> dingau.
Vane,	Váyu,	wind,	<i>L.</i> vannus. <i>F.</i> vanne.
Very,	Bhúri, 6,	much,	εργι, <i>F.</i> vrai.
Vile,	Vilaksha,	vain state,	φαιλος, <i>F.</i> vil, <i>L.</i> villis, <i>H.</i> hevel.
Upper,	Upari, 4,	above,	<i>Go.</i> ufar, <i>Da.</i> over, <i>Swe.</i> ofre, <i>vpsi</i> , <i>G.</i> auf, <i>up</i> , <i>S.</i> uppa.
Udder,	Udara, 13,	belly, -	ουθαρ, <i>L.</i> uterus, <i>S.</i> uder, <i>L.</i> uber.
Was,	Vása,	abiding	<i>G.</i> wesen, <i>S.</i> wesan.
Weave,	Vap, 16,	weave,	υφαω, <i>web</i> , <i>G.</i> weben, <i>L.</i> opus, <i>P.</i> bafad, <i>L.</i> vibro.
Well,	Válita,	cherish,	ουλων, <i>L.</i> valeo, <i>G.</i> wohl, <i>R.</i> welü, <i>C.</i> gwell.
Wed,	Vadhuká,	wife,	εδνα, <i>S.</i> wedian.
What,	Yad, 48,	what,	<i>S.</i> hvæt, <i>Go.</i> was, <i>L.</i> quid, <i>H.</i> hua. [<i>waliu</i> , <i>Li.</i> welu.
Wheel,	Gola,	circle,	<i>S.</i> hweol, <i>ειλεω</i> , <i>L.</i> volvo, <i>Go.</i> walwia, <i>G.</i> walle, <i>R.</i>

ENGLISH.	SANSKRIT.	MEANING	COGNATES.
Wend,	Vand, 1,	surround,	<i>L. vitta, Go. winda, G. winde, wind.</i>
Wing,	Vihanga,	going swiftly,	<i>S. gewing, L. pinna.</i>
Wise,	Vidyā,	• knowledge	<i>Wit, εἶδω, Go. wait, R. wizu, C. wyddu, Li. wystu.</i>
Wish,	Ish, 23,	wish,	<i>G. heische, Li. jeszkau, Go. weiha, P. az. L. egeo, R. iszczu, ask.</i>
Woman,	Vamá, 13,	• woman,	<i>Go. wamba, Ga. fem, G. wamme, R. wymia, L. femina.</i>
Wrath,	Krodha,	anger, *	<i>ερίθω.</i>
Wound,	Vundh,	hurt,	<i>ouraw, G. wunde, Go. wundo.</i>
Wan,	Vána,	dry,	<i>S. wan, wane, C. gwan.</i>
Waste,	Vasta,	injure,	<i>araw, L. vasto, G. wúste, waste, H. bázan.</i>
Wax,	Vaksh,	accumulate,	<i>αἰζω, L. vegeo, Go. wahsia, G. wachse.</i>
Warm,	Gharma, 10,	heat,	<i>θερμον, P. garm, S. wyrman, Ga. garam.</i>
Wriggle,	Vrijana,	crooked,	<i>S. wriggan.</i>
Word,	Vrittam,	read,	<i>L. verbum, Go. waurd, Li. wardas : G. wort.</i>
Walk,	Valga, 5,	move,	<i>S. wealcán, G. walzen, ελκω, Li. welku, R. woloku.</i>
War,	Vri, 20,	defend,	<i>G. wehre, Go. waria, Li. wyras.</i>
Ween,	Ven,	reflect,	<i>οιειν, S. wenan, G. wahren, H. bun.</i>
Wash,	Uksh,	clean,	<i>Li. ukstu, υρῶς, σακίζω, G. wasche.</i>
Wolf,	Vrika,	wolf,	<i>L. vulpes, Li. wilkas, αλωπηξ.</i>
Wall,	Val, 13,	cover,	<i>εἰλαρ, L. vallum, Li. wolus, R. wal, G. wall, F. val.</i>
White,	Velá, 2,	time,	<i>Go. weila, G. weile, S. hwile.</i>
White,	Shweta, 46,	white,	<i>G. weiss, Go. hweits, καζω, L. castus, P. safid, S. hwit.</i>

ENGLISH.	SANĀKRIT.	MEANING.	COGNATES.
Wagon,	Vahana, 4,	vehicle,	G. wagen, R. wezenie, L. vehiculum.
Way,	Vega, 13,	speed, 13,	G. wege, S. wæg, βαω, L. via, voyage, H. boa.
Whisk,	Vaska, 3,	motion, 3,	βασκω, G. wischen.
Yoke,	Yugya, 30,	fit to be harnessed,	P. yugh, ζευγος, W. jau, Ga. kuing, S. ioc, R. igo, Go.
Young,	Yuvan,	youth,	S. jong, ηθεος.
Yea,	Iva,	so,	n, Go. ja, Ga. ja, R. ei, Ga. e, C. efe, F. oui.

[juka.

On a new species of Cervus, CERVUS DIMORPHÉ'. By B. H. HODGSON, Esq., Resident, Kathmandoo. With a Plate.

In January last, I procured from the Saul forest of the Morung, a young Stag rising two years, having horns of an unique character, and a stature and other attributes seeming to place him between the Axines and Rusans. I considered this animal to belong to a new species, but, as he was young and had the horns imperfect, I determined to wait awhile before noticing him to the Society. The animal since his arrival has lived and flourished in my stable. He is now nearly three years old, and his horns are perfect; but his pelage in course of moult or change. I will not not, however, longer defer giving you a summary description and sketch of what I apprehend to be an undescribed, though large and handsome species of Deer. This animal, like *Cervus Wallichii*, and *Cervus Elaphoides vel Duvancellii*, possesses a mixed character, so that I hesitate to class it with any known group at present, and shall merely indicate this attribute by assigning to it the trivial name of *Dimorphé*. My specimen has been reared in confinement: yet it approaches the Rusans in size and stature, but retains in youth at least a good deal of the graceful Axine type. Its horns are small, owing to confinement perhaps, and it is possible that maturer age may develope more snags or antlers. At present there is but one on each beam, and it has a very forward direction, as in *Elaphus* and our Affinis, species to which the present one is also allied by its short tail and moderate suborbital sinus.

Cervus Dimorphé, Mihi, new. Deer with moderate pale smooth horns, Axine in the general style, but more bent in the middle of the beam, more divergent and possessed of only one basal antler, which is directed very forward; small, or moderate, and vertical suborbital sinuses; interdigital pores; broad spreading ears and short stag-like tail. Stature and aspect mediate between the Axines and Rusans. In youth bright fawn-red, spotted with white; in age nigrescent bay with blackish neck and belly; a dark list round the muzzle, and white chin: limbs pale. Habitat the Saul forest.

Nepal, October, 1843.

Note on the "Flata Limbata," and the White Wax of China. By
Capt. THOMAS HUTTON, B. N. I

This insect occurs abundantly a little above Rajpore, extending along the jungles at the base of the mountains; the larva is of a pale brown, but this colour is completely hidden beneath a coating of pure white cottony down and powder, with which the whole body is thickly covered; from the tail or anal segment of the abdomen springs a thick tuft or brush of pure white down, which in a state of quiescence, remains horizontally extended posteriorly, but which the insect has the power of erecting and spreading out, so as to cover the whole of its back. These cottony appendages are curled or crisped at the ends, and when erected have precisely the appearance presented by the cut and curly ends of a root of celery when prepared for the table. The larva is furnished, like the perfect insect, with an inflected proboscis; the antennæ are also similar in both, being composed of three joints, of which the two basal ones are thick, strong and cylindrical, the second or middle joint being the longest, and the third or apical joint is a mere seta or bristle. The eyes of the larva are black, and it is from beneath them, and a little anteriorly, that the antennæ spring. The hind pair of legs have three short spines, the others are unarmed; the foot terminates in a double hook; and in these respects also the larva and imago correspond, except that the hind legs in the latter have no spines. The perfect insect is furnished with four wings, the under pair being pure white, and the upper pair or elytra of a beautiful apple green, bordered anteriorly with red; the abdomen is powdered with white cottony down as in the larva, and the last segment is furnished with a thick tuft of the same substance. The larva of this species is abundant on a certain shrub growing in the jungly tracts a little above the base of the mountains; they come forth from the ova in December, clustering round the stems and stalks of the branches and leaves, and even on the back of the leaves themselves. They deposit upon the branches a waxy substance of a pure white colour, in small grains of various sizes, and sometimes the branch becomes thickly encrusted with the substance; it is, however, more especially upon the leaves of the shrub that the wax accumulates, and this is so thickly laid on, and becomes so firm from exposure to the atmosphere, that it may

be pared off with a knife in thick scales or shavings, having very much the appearance of true wax. The taste is sweet, and the scales may, when fresh, be moulded into balls by the fingers. The reason why it accumulates so much on the leaves is simply from their catching the liquid drops which fall from the hundreds of larva clustering around the stems above.

This wax-like substance appears to be the excrement of the larva, and as it falls from them it is caught and collected upon the surface of the leaves, which at first appear to be only slightly sprinkled with moisture, and have a shining appearance like that caused by certain species of aphides. The liquid dropped is at first sticky to the touch, and sweet in taste; the leaves appearing to be thinly bedewed with honey; this gradually accumulates, and as it passes from a liquid to a solid state, appears like a thick coating of wax upon the leaves, but as it dries by exposure to the sun and atmosphere, it hardens into a snowy white brittle substance, giving the tree the appearance of being *white-washed*, or frosted over with white sugar, like the top of a Twelfth Night cake. It then cracks and falls in pieces to the ground, where it soon dissolves from rain and dews, and is lost.

The larva cluster so thickly round the stems of the shrubs which they frequent, as to give them the appearance of being loaded with snow, and the moment the tree is shaken, they spring off with a sudden jerk in all directions; when in motion, they erect the caudal appendage or cottony tail.

Some of the mature insects remain on the trees even after the larva are hatched, and I have taken many both in January and February; the green colour of the elytra had, however, given place to a faded yellow tinge like a withered leaf, and the insects were in a semi-lethargic state.

The larva appears in December or beginning of January, and gradually increases in size until the period of the rains, that is, until the middle of June, when they change to the perfect insect, and no more wax is deposited. This substance increases in quantity as the larva increases in size, but as it readily dissolves in water, it disappears entirely as soon as the rains have set in. The larva shews no rudiments of wings until its last moult, in which stage Donovan has figured the larva of *F. nigricornis*.

The last change being completed, the perfect insect now assumes the place of the larva, and clusters in hundreds around the stems of the same shrubs that nourished it through its immature stages, and instead of the snowy aspect which they formerly wore, the twigs are now, as it were, encircled by small green leaves or fruit.

I have never seen the *Flata Limbata* in motion unless when disturbed. They appear to pass their lives in a state of inactivity, merely moving round the stems of the shrubs, and never willingly leaving them until disturbed, when they spring off with a sudden hop, as the larva did before them, and like them, although dispersed far and wide, they gradually make their way back to the twigs of their favorite bushes.

The eggs are deposited within the twigs of the shrubs, which are punctured in patches of about one inch in length all round the stem, which frequently bears four or five of these nests; the places of deposit are detected by a slight swelling of the wood.

It is stated in Westwood's edition of Donovan's insects of China, that the wax deposited by the "*Flata nigricornis*," has been supposed to be the excrement of the insect, but that such is not in reality the case. I am of opinion, however, that the supposition is correct, and that the wax-like substance is nothing more than an accumulation of the fæces dropped in a liquid state from the larva, and I am strengthened in this belief from observing, that a perfect shower of minute liquid drops descends at intervals from the clusters of larva, and that these drops after accumulating and partially drying, are converted into the waxy state from which it is supposed wax candles are made, and which furnishes the famous white wax of the Chinese Empire. It has been suggested, that the liquid drops are an exudation from the punctured branches of the tree, but this I think is impossible; because in the first place, the drops of liquid are so minute and so sticky, that they would not have weight enough to cause them to detach themselves from the punctured stems; and secondly, because the larva are so closely clustered together round the stems, that any juices dropping from the tree, would never reach the ground, but must inevitably be intercepted by, and accumulated upon the bodies of the larva, which would thereby be destroyed. From these observations I am of opinion, that the liquid is the excrement of the larva, and it appears to differ very little from

the white powder and anal canopy of white cottony down with which the insect is loaded.

Kirby and Spence seem to think it very doubtful whether the Chinese wax is in reality the produce of the "*Flata limbata*;" and remark, that as Sir G. Staunton merely *supposes* that such is the case, and as he does not appear to have tried the experiment of dissolving the wax in oil, there is more reason to believe, that the white wax of China is the produce of a totally different species. In this opinion I most fully concur, from the results of experiments made on the wax-like substance procured from the "*Flata limbata*."

Westwood refers the wax to the "*Flata nigricornis*" of China, and states that the *F. limbata* inhabits Ceylon. Cramer, who figures both insects, gives Ceylon as the *habitat* of *F. limbata*, but assigns Africa as that of *F. nigricornis*; the specimen of the latter however, figured in Donovan's Insects of China, is said to have been taken from India. It is probable, therefore, that *F. limbata* may occur in Ceylon, India and China, and that *F. nigricornis* may likewise be found in the two latter countries, for Chinese forms are exceedingly common in this part of India, and this season I have captured both the Chinese Atlas Moth (*Saturnia Atlas*,) and two fine specimens of "*Buprestis bicolor*," said to be an inhabitant of Java.* I have likewise a species of *Flata* agreeing in all respects with *F. nigricornis*, except in wanting the row of black dots along the posterior margin of the elytra.

The newly-deposited wax of *Flata limbata* I found to dissolve readily in water, and when boiled and allowed to cool, a deposit of clear white crystals was formed in the vessel; these had no taste, and felt gritty in the mouth. On trying to dissolve this deposit in warm or even in boiling oil, no combination of the two took place, nor was I more successful in my endeavours to dissolve the crude wax in oil; while the attempt to melt it on the fire without water or oil proved altogether abortive, the wax merely burning and consuming away till it became converted into a hard and baked substance. Melted in water, the mixture assumed a brownish hue with strong aromatic scent. Thus all my endeavours to convert the substance into wax for economical purposes, according to the directions given in Westwood's edition

* Mr. W. H. Benson also possesses a specimen of *B. bicolor*, taken here some years since.

of Donovan's Insects of China, failed most completely, thereby proving the doubts of Messrs. Kirby and Spence to be well founded, and clearly shewing, that the article termed the white wax¹ of China, is not the produce of the "*Flata limbata*"

Regarding the Chinese wax, Du Halde informs us in his 'Histoire de la Chine,' that "Il y en a qui disent que c'est la fiente de ces insectes qui s'attachant a l'arbre forme cette cire, *mais ils se trompent.*" (Westwood's Donovan's Insects of China, p. 41.) Notwithstanding this assertion, I am of opinion that if Du Halde refers to *F. limbata*, he is himself in error, and that the wax-like substance produced by that species, which Kirby declares to be the Chinese insect adverted to, is nothing more, as I have above stated than the fæces of the larvæ. Is it, however, fully ascertained that the species of insect referred to by the above named author, is really the *F. limbata*, or even the *F. nigricornis*, as stated by Donovan? This at least is certain, namely, that if the wax of the Chinese insect is soluble in warm oil, as Du Halde and Sir G. Staunton have declared it to be, it cannot possibly be the produce of the *F. limbata*, for I have shewn already by experiments, that the produce of that species is altogether *insoluble* in oil.* Besides this, Du Halde relates that, "after melting and straining the wax, it is thrown into cold water, where it congeals into small cakes." This too will not hold good with respect to the wax of *F. limbata*, for after melting it on the fire and immersing it in cold water, a precipitation of beautiful small clear crystals is produced, instead of cakes of wax. Neither will the substance melt on the fire, nor combine with oil, like true wax, but requires the aid of water to dissolve it.

It is not improbable that Sir George Staunton may have supposed this species to be the true wax insect, from the mere circumstance of its producing a *wax-like* substance on the branches and leaves of the shrubs on which it feeds, for he does not say positively that he had ascertained it to be the fact, but merely that the powder was *supposed* to form the white wax of the East.

The Abbé Grosier's account of the wax insect can moreover in no way be made to apply to the larva either of *F. nigricornis* or *F. limbata*; for he states, that the tumours on the branches "increase until they

* Unless some peculiar kind of oil may possess the power of dissolving it?

are as big as a walnut, and that those nests are the abdomens of females, filled with the eggs which are to give birth to the cocci, which when hatched, disperse themselves over the leaves and *perforate the bark under which they retire*," and that the wax is afterwards "*perceived rising from the bark round the body of the insect*," (vide Kirby and Spence, vol. 1. p. 327.) Now as already stated above, the eggs of *F. limbata* are deposited in the branches of the tree, the bark of which is perforated or punctured all round quite closely in longitudinal rows to the length of about one inch; their presence being indicated by a very slight intermescence of the wounded parts. When the larva are hatched they *come forth from beneath the bark*, and cluster in hundreds around the stems and twigs, living thenceforward unconcealed, and depositing a liquid shower upon the leaves beneath their resting places, which as it hardens in the air, assumes a wax-like appearance, and eventually becomes pure white like hoar frost, when it cracks and falls to the ground in pieces of various size and thickness, and is soon incorporated with the dust.

From all these statements, therefore, we arrive at the positive conclusion, that as this deposit will neither melt on the fire *per se*, nor combine with oil, it cannot be the substance from which the famous white wax of China is formed; and we are led to perceive from the difference in the habits of the larva of *Flata limbata*, and that of the insect mentioned by the Abbé Grosier, that the wax is rather the produce of a species of coccus than of the larva of *Flata limbata*, or even of the allied *F. nigricornis*.

Specimens of the wax are sent for analysis:—

No. 1. The crude fresh wax as gathered from the leaves.

No. 2. Is the wax after drying from exposure to the air.

No. 3. Is the deposit of crystals on the cooling of No. 1. Dissolved on the fire with water.

No. 4. Is a specimen of "*Flata limbata*."

Should the wax, after analysis, be found of any use, either medicinally or otherwise, it can be collected in considerable quantity from January till June.

THOMAS HUTTON, Captain,

Mussoree, 15th August, 1843.

Bengal Army.

Qualitative Examination of the Native Copper found on Round Island in the Cheduba group South East of Ramree, and forwarded to the Society by Captain CAMPBELL, See Proceedings Asiatic Society for April 1843. By S. MORNAY, Esq.

II. TORRENS, Esq., *Secretary of the Asiatic Society of India.*

MY DEAR SIR,—I have great pleasure in handing you the result of the examination I have made, at your suggestion, of the Copper from Flat Island.

My own business has occupied me so much lately, that I have had very little spare time to give to the investigation, or I should have finished it much sooner.

Your most obdt. servt.

S. MORNAY.

A qualitative Analysis of Native Copper found on Flat Island, in the Bay of Bengal.

A piece digested with heat in dilute Sulphuric Acid for several days, left a grey powder undissolved, (residuum No. 1.) The solution was pale blue, precipitated with Bi-carbonate of Ammonia, and re-dissolved, all the soluble part of the precipitate with Caustic Ammonia.

In the undissolved part found globules of *Mercury*, separated them and dissolved the rest in cold Muriatic Acid. The solution was greenish yellow: neither boiling nor diluting with water made any alteration. This solution was affected by reagents, as follows:—

Caustic Potash—White, permanent.

Caustic Ammonia—White, ditto.

Carb. of Soda—Snow white.

Hyd. Sulp. of Amm.—Green black.

Ferro-chyaz. of Potash—Dark blue (whole mass coagulated.) In some experiments this reagent merely changed the color of the solution to a dark olive green, owing to the acidity of the solution.

Tincture of Galls—Brown,
it therefore contained *Titanium*.

The above-mentioned solution in Caustic Ammonia evaporated to crystallization, gave beautiful blue crystals; those dissolved in water, behaved as follows:—

Caustic Potash—Pale blue, permanent.

Ditto Ammonia—Pale blue, flocculent: in excess of Ammonia, soluble with the beautiful blue color characteristic of Copper

Carb. of Soda—Pale blue green, permanent.

Bi-carb. of Ammonia—Pale blue: in excess soluble with the same blue color, as above.

Hyd. Sulp. of Ammonia—Black.

Ferro-chyaz. of Potash—Brick red.

Tincture of Galls—No re-action.

Mur. of Barytes—Dense white.

they were therefore pure Sulphate of *Copper*.

Residuum No. 1, melted by the blow-pipe, in the oxidizing flame with Borax and Phosph. of Soda, gave a limpid gloss: but in the reducing flame, at the moment of cooling it assumed a beautiful garnet color, which was permanent, till the bead was fused again in the oxidizing flame, when it became limpid. When much of the oxide was used, the lead assumed a clear black instead of the garnet color.

In some experiments, the color was dirty brown, but a little tin added, immediately purified the color.

These two experiments prove the presence of Titanium and a little *Iron*.

Residuum No. 1, digested in Muriatic Acid, cold. (At the bottom of the vessel, appeared small limpid crystalline scales, brilliant as the diamond.)

The solution behaved as follows:—

Caustic Potash—White, permanent.

Ditto Ammonia—Ditto ditto.

Carb. of Soda—Ditto ditto, (very voluminous.)

Hyd. Sulp. of Ammonia—Black.

Ferro-chyaz. Potash—Emerald green. (In three days turned opaque dark blue and deposited.)

Tincture of Galls—Brown.

Titanium again :

The bright scales dissolved in slightly acidulated water :—

Caustic Potash—White, soluble in excess.

Ditto Ammonia—Ditto, permanent.

Carb. of Soda—ditto ditto, (dense white.)

Hyd. Sulp. of Ammonia—Black.

Ferro-chyaz. Potash—White.

Tincture of Galls—Pale brown.

Sulp. Acid—Dense white.

Nitrate of Silver—Ditto. ditto, floeculent.

they were therefore Muriate of Lead.

In one experiment, another piece of the copper dissolved in Nitric Acid, left a heavy white residuum, which, digested in concentrated Sulp. Acid, left another residuum, which last digested in an excess of Muriatic Acid, boiled and diluted with water, gave a solution which shewed the presence of Cobalt ; as under :—

Caustic Potash—Brown.

Ditto Ammonia—Blue rose.

Carb. of Soda—Pale rose.

Bi-carb. Ammonia—No re-action till the Acid was neutralized, when pale rose.

Hyd. Sulp. of Ammonia—Pale dirty yellow.

Ferro-chyaz. of Potast. Emerald green, (next day dark blue deposit.)

Tincture of Galls—Brown.

∴ *Cobalt* with a little Titanium.

Summary.

This Mineral is an alloy of Copper, Titanium, Mercury, Lead, Cobalt and Iron, in different proportions.*

Remark

The different pieces vary in their composition.

S. MORNAY.

No. 13, Chowringhee Road, 28th November, 1843.

* There is, in the Philosophical Magazine for June 1843, an account of a Fahlerz containing Mercury from Hungary, but we have as yet found no traces of Sulphur or Antimony with our Mineral. The specimen which I examined, which was one of the first sent up by Capt. Williams was nearly pure native copper, with a coating of red oxide and the blue and green carbonates.—H. P.

Memoranda of Earthquakes and other remarkable occurrences in Upper Assam, from January 1839 to September 1843. By Capt. HANNAY, B. N. I.

Year.	Month.	Day of Month.	Remarks.
1839	January	14,	Earthquake 9 P. M. Felt at Suddeeah, direction apparently from S. W. to N. E. preceded some days by rain and heavy snow in the mountains; air very cold.
	Feb.		This month commenced hot, with dreadful hail storms, thunder and lightning.
	June	3,	Earthquake 8 P. M. At Suddeeah, apparently from South to North, strong N. E. wind. Burrumpooter high, wet and disagreeable weather.—N. B. From March up to this date, the season unusually rainy. Small-pox very prevalent, lost several men and a native officer from this disease.
	Sept.		Cholera. Cholera broke out, and continued with more or less severity at Suddeeah until the end of November; about 30 men in the corps died—this disease followed a Detachment which proceeded on service into the Mishmee Hills on the 18th October, and spread amongst the Hill tribes.—N. B. Although I now forget the month, I think there were four shocks of Earthquakes felt at Suddeeah in 1839.
1840	March	Total Sun Eclipse and Earthquake.	When the sun was obscured, the air was unusually cold and disagreeable to the feelings, even to nausea. About an hour after the Eclipse passed off, i. e. about 1 P. M. a smart shock of an Earthquake, and about 10 minutes afterwards another; both shocks appeared to have come from south—these I felt outside, the sky cloudless, but the atmosphere hazy.
			1840. Passed without any thing else remarkable; it was a healthy and seasonable year.
1841	Feb.	Earthquake.	Felt an Earthquake at Gowhatti on either the 9th or 11th, forgot which. This Earthquake was different to those above-mentioned; it was accompanied by a low rumbling noise; was sharp and stunning, as if a blow had been struck under the jaw; the others alluded to, appeared, on the contrary to have more of a trembling or rocking motion.
	June	Gales.	Strong gales on the Burrumpooter, both this month and July, from the N. E.
		Meteor.	N. B.—In February 1841 at night, a splendid Meteor was seen at Seesagur, and in other stations in Upper Assam. It passed from East to West of the heavens, and burst with a loud report, the first like the firing of several large guns, and ending exactly like musquetry file firing.—Individuals on the Frontier who had not seen the Meteor, imagined some of the out-posts had been attacked.

Year.	Month.	Day of Month.	Occurrences.	Remarks.
1842	January		Earthquake 7½ P. M.	A smart shock felt at Seesagur; the weather gloomy, cold and threatening rain; cannot speak as to duration; shock similar in motion to those already noticed.
1842	June		Gales.	From 3d to 6th, heavy gale of wind from South-west.
.....	October	29,	Earthquake about 8 P. M.	A smart shock of an Earthquake; duration apparently from S. W. to N. E. trembling motion.
1843	Feb. March		Comet.	Air unusually wet; a disagreeable month. Seen at Sakenah on the evening of the 7th of this month. Head with a common compass W. 21° South, and of Tail West 47° South—rain continued most of this month.
During these months, Cl Gowhattee, Nowgong and Durrung; several ses at Seesagur in June, it none fatal.	April		Meteor.	From East to West seen at Seesagur, burst with two loud reports.
	April		Earthquake 8 P. M.	After a very hot day and close sultry evening, a severe shock of an Earthquake at Dibrooghur, lasted several minutes. The motion however was only trembling, affected those houses which had posts built up by walls; duration appeared to be from West or South-west.
	April		Earthquake.	Slight shock felt at Dibrooghur at midnight. N. B. Both these Earthquakes felt at Seesagur, Jeypoor and all over Upper Assam.
	May	24,		From this date to 27th May, gales of wind at Seesagur from S. W. Some of the squalls very severe, sky in the day time clear, but stiff looking, with some white fleecy clouds; gale blowing hard on 26th along the line of the Naga mountains 15 miles distant, and on the Burrumpooter, which rose very high.
	1843 June	15,	Earthquake 11 P. M.	At 11 A. M. smart shock of an Earthquake; motion, vertical.
	June	17,	Earthquake 8 P. M.	A very smart shock; at first slight and followed by a severer one; motion undulating, and from the position of a clock which was stopped, must have come from S. W. or West; lasted altogether about a minute. The weather rainy, with occasional light squalls from S. W. These shocks felt at Dibroo, Jeypoor and Sakenah, that of this date at a few minutes past 8, reported by the Officer to have thrown down a portion of the bank of the Burrumpooter.
	August	23,	Meteor.	A meteor of no great magnitude passed to the North, very vivid lightnings in the S. W. several flashes appeared as if rising from the ground like the bursting of a shell.
	Sept.		Earthquake 2½ P. M.	After as hot and sultry a day, (the 2d) as I ever felt, the clouds gathered to S. W. indicating rain, but passed off without any; night very close and sultry; awoke by a smart shock of an Earthquake; cannot speak as to duration.

Year.	Month.	Day of Month.	Occurrences.	Remarks.
1843	Sept.		Earthquake 7½ P. M.	After a very hot day, clouds gathered at S. E. very close and sultry; squall came on a little before sunset; vivid lightning all round the heavens; previous to squall, making an extraordinary noise in the heavens over head like the falling of heavy rain on distant jungle, or like the rushing of wind through a funnel, with this noise you heard an occasional growl like distant thunder. When the rain fell, this noise, which had continued for sometime ceased—thunder very high in the heavens, but the lightning one blaze all round. Whilst at dinner, smart shock from the South.

*Memorandum of various Phenomena in 1843. By the Rev. N. BROWN,
Missionary Assam.*

January 14.—Great gale in England.

February 8.—Earthquake at Antigua.

February 18.—Earthquake at Leipsic.

February 27.—The comet passed its Perihelion.

March 3.—Comet seen at Sea 10° S Lat. 25° W Long.

March 6.—Comet seen at Calcutta.

March 10.—Earthquake in England at 1 A. M.

April 1.—Earthquake at Bellary at 5 A. M.

April 4.—Meteor at Sibsagur,

April 6.—Earthquake at Sibsagur about 8 o'clock in the evening.

April 7.—Earthquake at Sibsagur at 1 A. M.

June 3.—Earthquake at Titalyah.

June 15.—Earthquake at Sibsagur at 11 A. M.

June 16.—Earthquake at Sibsagur at 8 P. M.

June 17.—Earthquake at Ceylon.

August 23.—Evening, a meteor fell near Sibsagur.

September 3.—Earthquake at Sibsagur at ½ past 2 A. M., another at ½ past 7 P. M.

Proceedings of the Asiatic Society.

(Wednesday Evening, the 4th October, 1843.)

The regular Monthly Meeting was held on Wednesday evening the 4th October.

The Honourable the President in the chair.

The following new Members were balloted for and proposed :—

Dr. A. Sprenger, B. M. S. was duly elected ; and ——

W. Ganthony, Esq. was proposed by the Secretary, and seconded by Mr. Piddington.

The following list of Books, presented and purchased, was read.

Books received for the Meeting of the Asiatic Society on the 4th October, 1843.

The Calcutta Christian Observer, October 1843, new series, vol. iv, No. 46.

Presented by the Editor.

The Calcutta Literary Gleaner, Calcutta, August and September 1843, vol. ii,

Nos. 6 and 7 Presented by the Editor.

Supplement to the Oriental Christian Spectator, 2nd series, Bombay, August 1843, vol. iv, No. 8. Presented by the Editor.

The Monthly Journal of the Agricultural and Horticultural Society of India, Calcutta, 1842-43, vol. ii, Nos. 1 to 7.

Hart's Report on the Trade and Resources of Kurrachee, Calcutta, 1843. Presented by Government.

Survey of the Route from Kurrachee to Sehwan, Calcutta, 1843. Ditto.

Report on the Kulleeree Canal, 1840. Ditto.

Collection of Papers regarding the course of the Indus, and especially of its Eastern Mouth and the Branches falling into the Runn of Cutch, Calcutta, 1843. Ditto.

The Annals and Magazine of Natural History, London, June 1843, vol. xi, No. 72.

Yarrell's History of British Birds, London, June 1843, vol. i, part 37.

Wilson's Translation of the Megha Duta, or Cloud Messenger, 2nd Edition, London, 1843. From the Author, H. H. Wilson, Esq. &c. &c.

Stevenson's Translation of the Sanhita of the Sama Veda, London, 1842.

Selections from the Mahabharata, edited by F. Johnson, London, 1842.

Sanhita of the Sama Veda, from MSS. prepared for the Press by the Rev. J. Stevenson, London, 1843, (Sanskrit.)

Read the following letter from the Secretary of the Royal Asiatic Society of London:—

To the Secretary of the Asiatic Society of Bengal, Calcutta.

DEAR SIR,—I have had the pleasure to receive, through Messrs. W. H. Allen and Co. your letter of the 11th May, enclosing a Bill of Exchange for £21, the amount of two years' Subscription of your Society to the Oriental Translation Fund. As Messrs. Allen and Co. have paid the Subscriptions for 1842 and 1843, the amount of your Bill shall be duly credited to your Society for the years 1844 and 1845.

With thanks for your obliging attention to my request for a remittance,

I have the honor to remain, Dear Sir,

London, 14, Grafton Street, Bond Street,
11th July, 1843.

Your's truly,

JAMES REYNOLDS,
Secretary.

Read the following letter from the Society's Booksellers and Agents, Messrs. Allen and Co.:—

To H. TORRENS, Esq. Secretary to the Asiatic Society.

SIR,—We have received your letter of the 11th May, informing us of your having resumed the duties of Secretary to the Asiatic Society, upon which we congratulate you. By the enclosed letter you will observe, that we have paid £21 to the Rev. James Reynolds, on account of the Subscription of the Society to the Oriental Translation Fund for the years 1842 and 1843. We shall be obliged by your attention to our letters of 29th April, and 17th and 30th June last, addressed to Mr. Piddington, as Secretary to the Society.

We are, Sir,

Your most obedient Servants,

London, July 31, 1843.

WM. H. ALLEN & Co.

Read the following letter from Mr. John Murray, son and successor of Mr. John Murray, of Albemarle Street, London:—

SIR,—Among the numerous accounts of Books which, in succeeding to the business of my late father, I have caused to be made out, is that of the Royal Asiatic Society,* and I now forward you a copy of it from 1834, when it was last settled. The balance due to the Society shall be paid as you direct, as soon as you furnish me with the authority for so doing, and enable me to obtain a receipt.

I have to call your attention to the very slow and partial sale of the Transactions for some years past, and to suggest that, if you were to place the work in the hands of some publisher more intimately connected with India, the interests of the Society might be more surely advanced. I have to request you to take this into consideration, and to authorize me to deliver over the stock now in my warehouse to such Agent as you may appoint. As I anticipate removing my warehouse shortly, it would be very convenient to me to resign this charge, which I feel to have been an honor.—From some error in our enumeration, we paid the Society for certain copies of Vol. VII, which we now find are still in our hands.

I remain, Sir,

Albemarle Street, August 4.

Your obedient Servant,

J. MURRAY.

* So in MSS. the common mistake of confounding the *Asiatic Society of Bengal*, with the Royal Asiatic Society of London.

The stock of Books which will be received by you, you will sell as opportunities offer, placing proceeds to credit of the Asiatic Society, and furnish A. C. in course for information.

I have &c.

13th December, 1843.

H. TORRENS.

Read the following letter from Messrs. Allen and Co.

To the Secretary to the Asiatic Society, Calcutta

The 13th June, 1843.

SIR,—We beg to advise you of our having forwarded a case to the above address, by the ship Essex, containing a marble bust of the late James Prinsep, Esq. We enclose a Bill of Lading.

The Bust was sent to us by Professor Wilson, with instructions to forward it to the Society by an early opportunity.

We beg to annex for your information, an account of the shipping and other expences incurred by us, which sum we have placed to the debit of the Society.

We have the honor to be, Sir,

Your most obedient Servants,

WM. H. ALLEN & Co.

London, June 17, 1843

Asiatic Society, Calcutta, London, to Messrs. WM. H. ALLEN and Co. per "Essex."

Case containing Marble Bust of J. Prinsep, value £105

forwarded by direction of Professor H. H. Wilson. ... £105 0 0

Charges.

Entry, Wharfage, Shipping expences and Bills of Lading, ... 0 14 0

Freight £1 7 0; Insurance on £110. at 40 per cent £2: 4 0

and policy 10s. ... 4 1 0

£109 15 0

Read letter from Messrs. Collett and Co. acknowledging receipt of the 49 (not 50 as supposed) copies of the Scinde Vocabulary, sent to them for sale.

Read the following letter from the Secretary to Government of India in the Foreign Department :—

No. 193. •

Office Memorandum.

The Secretary to the Government of India in the Foreign Department has the honor of forwarding to the Secretary of the Asiatic Society, for deposit in the Society's Library, one copy of each of the printed papers noted in the margin.

Collection of Papers regarding the course of the Indus, &c.
Survey of the Route from Kurrachee to Schwan.
Report on the Trade and Resources of Kurrachee.
Report on the Kulleerec Canal.

Fort William, Foreign Department,

The 30th September, 1843.

J. THOMASON,

Secretary to the Govt. of India.

The Secretary stated, that it had been brought to his notice by Dr. Roer, the Librarian, that the present Library rules were by no means sufficient for the careful and exact custody of the Books, and that some amendments and additions were imperatively required. Ordered, that the Committee be requested to revise the Library Regulations.

Read the following papers, detailing the progress which had been made since the Meeting of September, in carrying into effect the Society's resolution to address Government on the subject of the new Volcanic Island and Copper Ore deposit near Cheduba.

Memorandum by the Geological and Mineralogical Curator, as requested by the Society.

At the September Meeting of the Society was read the following letter of Captain D. Williams, Assistant Commissioner, Arracan :—

No. 1824.

MY DEAR SIR,—The Soogree, or head revenue officer on the Island of " Regaing," or " Flat Island," has just made a report, of which the enclosed is a translation, that on the 26th, 27th, 28th, and 29th of last month, a Volcano broke out in the sea, a little distance South of " False Island," and a new Island was formed.

On reference to a chart of Arracan, you will see that " False Island" is East of " Flat Island," and the latter is South of " Round Island," whence I obtained the Copper Ore I lately sent to the Asiatic Society; the groupe is situated on the S. E. shore of the Island of Chedooba. I consider the subject of sufficient interest to report on to the Society, especially as regards its vicinity to the Island where the Copper Ore was found.

Yours, &c.

Ramree, August 9, 1843.

(Signed) D. WILLIAMS.

P. S. I have sent for specimens of the new formation.

2. A notice of the Copper Ore alluded to will be found in our Proceedings for the month of April, but I may briefly state here, by way of connecting the facts for consideration, that in March Captain Williams sent us up some very pure specimens of rolled native (virgin) Copper, and a ring manufactured from them by a native artist, which he stated had been found on Flat Island.

I wrote for more of it, as also for information as to the site, and specimens of the matrix, &c. before reporting on the subject to Government, and Captain Williams in reply sent me a quantity of gravel and shells from the sea shore, without a trace of the ore amongst it,* which the native discoverers had brought to him as a sample of the bed or place where the ore was found. I thought this very suspicious, and that it was probable that the natives having found out the value of the Copper ore, were now concealing the spot from Captain Williams, and wrote again to him, urging him if possible, to send a person in some degree qualified to give us a plain common-sense account of the place where this rich ore was obtained, upon which I could found a recommendation to Government, in my report, to have the place properly examined, as there could be no doubt of the value of the ore; but that the quantity and expense of obtaining it were the next and most important considerations. I also mentioned it to Captain Brown and Mr. Howe, the

* Some more Copper was also sent *separately*, and these specimens were of a different kind of Copper ore from those first sent.—H. P.

Naval Officers at Kyook Phyo, and to the Commissioner, Captain Bogle. Captain Williams' last reply was, that he feared that for the present they had no one who would be likely to furnish a good account, but mentions Captain Siddons, the local Engineer Officer, to whom I intended to write, but illness for the last five weeks has prevented the preparing of my report to Government, and further correspondence on the subject.

Capt. Williams' letter was read at the meeting, but omitted in the Proceedings —

MY DEAR SIR,—An apology is due from me to you for having neglected to reply to your letter of May last, (I believe,) about the Copper Mine on Round Island, of which I am reminded by your letter, just received, of the 28th ultimo.

I should then have informed you, or I now beg to do, that it is necessary for a scientific person being sent to examine the spot. There is no such individual in this province that I am aware of, unless Lieut. Siddons of the Engineers, just arrived, may be; this must be done too in the fine season between November and April.

I lately sent up two gold Coins found on Chedooba to the Asiatic Society; since then I have had brought in two lumps of iron six inches long by $1\frac{1}{2}$ inch broad in the centre tapering to the ends, found on the same spot with the coins; the natives here tell me, they are weapons used by the Eastern pirates, which they hurl like a javelin at boats in attack, and that some such pirate boat must have been wrecked on Chedooba where the iron and coins have been found. I do not give sufficient credence to so improbable a story as to induce me to send up one of the Javelins, but will keep them for the Asiatic Society's orders. Yours very truly,

Ramree, July 20, 1843.

D. WILLIAMS.

3. It was proposed and sanctioned at the Meeting, that the Society should respectfully represent to Government the importance of dispatching some fully qualified person to the spot to examine into, and report upon it for general information.

4. The principal grounds upon which we may do so are, as they occur to me, the following:—

First.—The great, and indeed intense interest which geological phenomena of this kind invariably excite in Europe, as being connected with, and most strongly illustrating many researches and theories relative to the past and future changes of our globe.

Secondly.—Their interest in a maritime point of view, as connected with the appearance and disappearance of shoals, &c. in seas extensively navigated.

Thirdly.—The occurrence of the phenomenon so immediately in our own vicinity, and at a spot with which by means of the H. C. S. *Amherst*, we have a regular communication, so that, to use a homely phrase, “we have no excuse” for neglecting to investigate it.

Fourthly.—The great interest attaching to it as occurring so near to the spot of the recent eruption of the mud volcano of Ramree, and so soon after the great earthquake at Pulo Nias, on the coast of Sumatra, and its forming the Northern extremity of the great volcanic band laid down by Von Buch as extending only to Barren Island.

Fifthly.—Its undoubted connection with all the singular phenomena of the upheavements going on upon the Island of Cheduba, as by Captain Halstead's report, and the rich field which the adjoining coasts and islands probably afford for valuable geological data, as to the former changes which have taken place both there and further to the Northward and inland to the Eastward.

Sixthly —The foregoing considerations are geological ones. The presence of the rich copper ore makes it perhaps a matter of *financial* importance to Government to trace out if possible whence this is derived. It may be a mere ejection from the volcanos, as is supposed to occur in Iceland, or it may be that some of the islands or shoals are masses of copper ore, or that rich deposits of copper exist on the mainland or on the banks of the Aeng river; and I should mention in reference to this, that, as shewn to the Society at a recent meeting in the case of silver ores, rich ores of copper (the grey, black, and tile copper ores) might easily be thought common stones by those unaccustomed to recognise them.

There are, in short, all the *possibilities* from zero upwards, in such matters; and it is rare indeed that the opportunity occurs of tracing out on the same spot at one and the same time two questions, the one of abstract and the other of practical science.

Lastly.—I need not remark, that in researches of this kind, mere zeal without knowledge is a very insufficient qualification, and that it would be most unfortunate were the Society not to represent to Government in the strongest terms, that the most fully qualified person that can be found should be selected, and this plainly on financial as well as on scientific grounds.

If Members of the Committee of Papers will kindly add such farther suggestions as may occur to them, we shall be able thereupon to draft a letter to Government, setting forth the Society's views on this question, and respectfully soliciting its adoption of them.

H. PIDDINGTON,

13th September, 1843.

Curator Mineralogical and Geological Departments.

Memoandum by the Secretary.

I have to submit to the Hon'ble the President and the Committee of Papers, a note prepared by the Curator of the Museum of Economic Geology, upon the proposed recommendation to Government, that a properly qualified person be sent to report upon the peculiar geological phenomena, which have been recently observed in the neighbourhood of Chedooaba Island, as also upon a discovery of copper ore in the immediate vicinity of the volcanic influence.

The opinion of the Society has been recorded as to the high expediency of such a measure, and it now only remains to be decided, whether Government should be addressed as being requested to despatch a proper person, or whether the Society should not rather propose to select and despatch such a person, superintending, controlling, and directing his operations, the general charge being defrayed at the public cost.

I should be prepared in the event of the latter proposition being entertained, to lay before the Hon'ble the President, the names of qualified persons, from whom an em-

ployé might be selected, and have even had a proposition made me by a gentleman of scientific attainments to be allowed to accompany the person deputed as for his individual satisfaction, giving the advantage of the result of his observations. This would give us a double set of notes.

I need not say that we have no officer of the Society available for this scientific mission. The duties of the Museum imperatively require the constant presence and steady exertion of our officers, for after years of labor we are only just now beginning to establish order, and the good work must not be relaxed in.

I have the honor to request orders on the above points. II. TORRENS,
Vice President and Secy. As. Socy.

II. TORRENS, ESQ. *Secretary, Asiatic Society of India.*

SIR,—Having heard that the Society contemplate sending a person to investigate certain Geognostical phenomena in the Indian seas, I beg leave to offer my humble services to the Society for that purpose.

In support of my pretensions I hand you with this, copies of three documents, the originals of which I have by me, ready to produce when called for.

Mr. Marshman's letter I shew you, merely to prove that I have executed work of a scientific and laborious character in this country, without any assistance, to the satisfaction of a man well capable of judging it.

The report of Mr. Robt. Stephenson, the Engineer of the London and Birmingham Railway, upon the plans and estimates for a Railway in Brazil, shews that he was satisfied with my work in this peculiar line,—and the document upon which I lay most stress, is the certificate of the Council of Mines of Saxony; on the face of which you will see, that I have acquired some knowledge of all the Arts and Sciences which bear upon Mining, including Geology, Mineralogy, Chemistry, Metallurgy, Assaying, Surveying, and Mining Engineering: all of which may probably, more or less, be brought into action, on this occasion.

I beg to assure you, that if the Society should entrust me with this interesting commission, no exertion shall be spared by me to further the objects of my employers.

Your most obedient Servant,

Calcutta, 25th September, 1843.

S. MORNAY.

Mr. Mornay's certificate above alluded to is as follows:—

We, the Council of Mines of the Kingdom of Saxony,

Hereby testify, that Mr. Stephen Mornay from London, ^{was} matriculated on the Mining College of this place, by Royal License, dated 9th October 1829, and that he attended the following courses of lectures with great industry and very good success; viz. Mining; Geology; Mineralogy; Petrefactology; Natural Philosophy; General, Technical, Metallurgical, and Analytical Chemistry; Metallurgy; Transcendant Mathematics; Construction of Mining Machinery; Architecture and Drawing. And that he proved himself zealous in the attainment of practical knowledge in Geology and Mining. And that his conduct has always been moral and gentlemanly.

To certify these facts, we have, at his request, drawn up this certificate, sealed with the seal of the Council of Mines. Signed by us.

L.S.

<i>Freyberg, 6th October, 1832. Royal Saxon</i>	(Signed)	FREYHER V. HERDER.
<i>Council of Mines.</i>	(Ditto)	H. V. MANDELSLOH.
<i>Certificate for S. Mornay, No, 1966.</i>	(Ditto)	R. E. G. SEGELITZ.

H. T. TORRENS, Esq. *Secretary, Asiatic Society of India.*

SIR,—In reference to the offer of services contained in my letter to you of the 25th instant, and in regard to the payment of those services, I beg to state that I readily agree to the terms and conditions proposed by you at the Society's Rooms yesterday; viz.

1st. That I receive Co's. Rs. 400 (four hundred) per mensem, for whole months, and Co's. Rs. 150 (one hundred and fifty) per week for broken periods.

2nd. That I receive Co's. Rs. 3 (three) per diem, for my travelling expenses, whenever I am not supplied by the Honourable Company, with the means of conveyance, and

3rd. That all contingent expenses be defrayed by the Honourable Company.

I beg to add, that my time is in no way engaged, and that consequently I do not limit the term of my services to any period, but shall be glad to be employed on any other service I may be deemed fit for by the Society.

Your most obedient servant,

Calcutta, 28th September, 1843.

S. MORNAY.

The Secretary and Committee of Papers were requested to address Government proposing that a scientific person be deputed at the public cost to investigate the Geological and Mineralogical Phenomena of this quarter.

Read the following letter from Capt. D. Williams, 1st Assistant to the Commissioner Arracan:—

MY DEAR SIR,—I have now the pleasure to send you the two lumps of iron that were found with the gold coins on Chedooba, and which, the natives say, are the weapons used by the pirates from the Eastward in their attack on boats. Lieutenant Playre, the Senior Assistant of Sandoway, proceeds to Calcutta on leave on the "*Amherst*," and will probably take charge of these lumps of iron, and if I see him on his way, I will request him to converse with the natives on the subject. I shall feel extremely obliged for any information that may be gained respecting the gold coins; they are not coins of this country, either under the Mug or Birman dynasties, as Lieutenant Playre can prove.

Yours sincerely,

Ramree, August 23, 1843.

D. WILLIAMS.

The lumps of iron alluded to were exhibited. They are much corroded, but their form seems to have been, when perfect, a rough double square pyramid, of about two or three inches on each side joined at the base, which

is now about two inches only. They presented externally the usual carbonised appearance and softness of iron which has been much exposed to water, but were found to be internally sound and metallic.

Read the following letter from Conductor Dawe, relative to the remains of the Dadoopoor Museum, which have been kindly offered to the Society by Capt. Baker, B. E. :—

To H. PIDDINGTON, Esq. *Sub-Secretary, Asiatic Society, Calcutta.*

SIR,—I beg to acknowledge the receipt of your note respecting the collection which has been offered to the Society by Captain Baker, and in reply, I beg to inform you, that I find in the Museum three or four fair specimens of Mastodon's heads; a few large masses of the heads of above with the upper jaws, and the teeth in good preservation; several of lower jaws of above, the enamel of the teeth in good condition; a few fragments of heads and bones of Hippopotamus and Rhinoceros, and numerous bones of smaller animals in a fractured state, but which can be easily joined with our cement. I can also select a variety of the teeth of deer, horse, bullock and the like. But what I now particularly write for, is, to get your instructions as to the quantity you would wish me to send, as I find the cost of each six dozen chest full that has been sent down to Calcutta through the merchants at Meerut, has been on an average 21 rupees each, including land carriage from this place to Gurmuckteer Ghat, (eight stages,) and boat hire thence to Calcutta.

As soon as I receive your reply, I shall have much pleasure in selecting what you may require.

I remain, Sir,

Your obedient servant,

Dadoopoor, Sept. 6, 1843.

WM. DAWE, *Condr. Canals West of Jumna.*

It was stated that Mr. Dawe had been requested to forward the whole of these valuable relics.

Read a letter from Capt. Thos. Hutton, B. N. I. accompanying specimens of the Flata Limbata, with that of its wax, and a paper on this insect and the White Wax of China.

The paper was transferred to the Editors of the Journal for publication. Read the following letter from Capt. Hannay, B. N. I. : from Seebagur, Assam.

MY DEAR SIR,—Perhaps the enclosed Memo. from this part of the world may be interesting. I wish I could speak more correctly as to Earthquakes, for we have I am pretty sure a number of shocks yearly, commencing about January after our first rain which falls about New Year. After very sultry and close weather the air becomes very cold, and we could thus almost say, that atmospheric influence had something to say to our Earthquakes, else we are in the vicinity of some Earthquaking power. Most of our shocks do not appear to be felt lower down the valley, but I have understood that at Tezpoor, shocks are very frequent. No volcanoes in the neighbourhood, but the line of the Naga Hills (nearer ranges) abound in iron and coal and numerous Petroleum springs, and in the Singpho country springs of white thin mud. You may depend upon my notes of all the Earthquakes put down in the Memo. The shocks this year have been nine in number, and severe compared to those of other years, particularly on 17th June last. It is difficult, however, to ascertain the duration of the shocks. In 1834, an Earthquake threw down partly the old palace of Rungpoor, and a part of the earth opened near Jorehath, from which issued red sand and water. The Cholera visited the valley in 1834, 1839, and 1843.

Your sincerely,

Seebagur, 5th September, 1843

W. HANNAY.

This peculiarly interesting document was transferred to the Journal for publication, and the Sub-Secretary stated, that he had had a copy prepared for forwarding to Lieut. Baird Smith, who has so zealously taken up this branch of research.

Read the following letter from G. Buist, Esq. in charge of the Hon'ble Company's Observatory at Bombay :—

H. TORRENS, Esq. *Secretary to the Asiatic Society.*

DEAR SIR,—I duly received, through the Bombay Government, a copy of your application to be supplied with copy of the Registers of the Bombay Magnetic and Meteorological Observatory at present temporarily under my charge.

I should have complied immediately with your request, and forwarded a monthly number of our observations so far as they extend, that is, from 1st September 1843, without delay, but that as we were on the eve of completing the year, I have thought it better to defer for a few weeks, when the volume will be sent to you.

I have taken the liberty of explaining this to you for the information of the Society, lest you should suppose that the delay had arisen from any neglect or inattention.

I have forwarded by the Ship *Samuel Boddington*, to the address of Mr. Piddington, a copy of a chart for the use of the Asiatic Society of the readings of nine Barometers observed simultaneously for 24 hours, projected on curves—the memoir explanatory of this is now nearly ready, and will be sent by post.

I shall at all times have the greatest gratification of forwarding for the use of your Society, any documents connected with the Observatory they may desire to possess.

I have the honor to be, &c.

Bombay, 6th September, 1843.

GEO. BUIST.

Read a letter from Capt. Thos. Hutton, B. N. J. offering for sale to the Society, a large collection of above 1600 specimens of Natural History from Affghanistan and the Hills. The offer was declined, the Society already possessing a large proportion of the specimens.

Read extract from a letter from Capt Boileau, Magnetic Observatory, desiring to know whether the Society would be willing to take up the publication of his Hygrometric Tables.

It was resolved, that the Society do so.

Read the following extract of a letter from Lieutenant Colonel Reid, R. E. Governor of Bermuda, and author of the well known work on the Law of Storms, addressed to the Sub-Secretary, affording a gratifying proof of the interest taken in that branch of research at home, and of the advantage which the early publication of the labours of scientific men through the Society's Journal affords them.

MY DEAR SIR,—I have received all your six Memoirs, and I believe all your letters, and I should have answered your last one sooner, but for the importance I attached to the Memoir on the Storms of the China Seas. I have read it with great attention, and the more I considered it, the more I saw you had bestowed great pains upon it. As I went on reading, I drew a diagram on the margin for each storm, such as a sea-man would have to draw, had he no data but his own observations in the midst of a

storm. If you could get wood-cuts made at Calcutta, such diagrams would, I think, improve your papers.

There can be no doubt, as you shew, that some of the Storms as they pass over the China Sea, have sometimes a course to the Southward of West. At first I thought the Storm of each of the ships called *Thetis* must be but one storm: but after attentive study, I am more inclined to agree with you and with your paper, which throughout bears the impression of attentive consideration. I hope you will be able to go on, and be supported in your endeavours to develop this great subject as regards the Indian Seas. I do not doubt that you will be assisted by the Governor of Hong-Kong and the British Government Agents in China, and shall consider whether any recommendation from me can help to procure such aid for you, not from the intrinsic worth of any recommendation of mine, but of the value of the subject, and the importance of it in saving life and property.

Here the Admiral on this station, Sir Charles Adam, is giving us great assistance by requiring all the squadron under his command to improve the mode of keeping the log books, and helping in what he can to track the gales. One Storm we have followed from the West Indies nearly across the American continent, at least to the mountain ridge beyond Victoria in Mexico.

I do not recollect that I sent you a copy of the enclosed printed note.—“On sailing on curved Courses when meeting with revolving winds,” which has been printed three times over. I hope soon to receive some other tract from you. Believe me,

Yours &c.

Government House, Bermuda, 23d June, 1843.

(Signed) W. REID.

*Read the following Report from the Curator Museum Economic Geology,
for the months of August and September.*

During the month of August, illness having prevented my preparing a report, the present one will comprise both months.

Museum Economic Geology.

Our first contribution here is a truly valuable one from Mr. Homfray, to whom the Journal is indebted for a valuable paper on the coal mines of the Damoodah District, in 26 specimens from the Amanath and others of the Palamow Coal Fields, comprising specimens of the strata (in one instance to the granite) and of various trap dykes of the greatest geological and mining interest. Mr. Homfray's letter is as follows:—

H. PIDDINGTON, Esq.

MY DEAR SIR,—I have now the pleasure to forward for the acceptance of the Asiatic Society for their Museum of Economic Geology, a set of specimens of the strata in the Amanath Coal Field of Palamow District, as also some others from the Palamow Coal Field, together as per list annexed.

I have also sent some of the principal specimens of the sandstone rock which I have hitherto met in sinking my deep pit at Salmah, now, August 1843, down as low as 275 feet, having passed

through seven veins of inferior and thin Coal and one of Iron stone, and am still going downward, having persevered for many years in sinking this pit, and at an enormous outlay of money to myself alone.

I send also two pieces of the Basaltic Dykes taken from the place where the two greatest Dykes of the Coal Field of Damoodah actually cross each other; thus one is from the Bharah Dyke to distinguish it from that of Salmah, and this Bharah is evidently the most recent, as it runs through that of Salmah, and the other piece is from the Salmah Dyke at the same locality. The Ironstone found beneath the Behareynauth Hill is the same sort as what is now smelted near to Gautcole.

From the Barracar I send a piece of the great fault (Greenstone) which throws up and cuts off abruptly the vein of Coal, and also a curious sample of the Coal found and cut from the vein close to the fault.

I am, Dear Sir,

Yours faithfully,

Golahdangah, Howrah, 18th August, 1843.

J. HOMFRAY.

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Sandstone, the upper one of the Amanath Coal Field. 2. Shale. 3. Sandstone the second. 4. Ditto (hard) from the middle of Coal vein. 5. Ditto with pebbles over main Coal. 6. Shale below main Coal. 7. Sandstone below ditto. 8. Ironstone. 9. Main Coal. 10. Conglomerate Sandstone below the Ironstone. 11. Black Shale below ditto. 12. Syenitic Quartz. below ditto. 13. Granite below ditto. 14. Found in the pass between Shapore and Choperee. | <ol style="list-style-type: none"> 15. Black Shale found to the Westward of the Coyle and towards the Kunkur Run. 16. Limestone (Lias ?) from Rotasghur. 17. Black Shale from near Bidgeghir by Kuleas Copas village. 18. Ironstone from Potua Agar in the Palamow Coal Field. 19. Thin Coal from several veins in the river near Rotas (Palamow.) 20. Five samples of Sandstone from the Salmah pit, now sinking. 21. Clay slate from ditto. 22. Basalt from Bharah Dyke, } at the intersec- 23. Ditto from Salmah ditto, } tion. 24. Ironstone from Behareynauth. 25. Coal from the fault in the Barracar Colliery at the fault. 26. Greenstone from the above fault. |
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Our next contribution is from Captain R. Ouseley, Assistant to the Agent of the Governor General, S. W. Frontier, who forwards with the following letter, specimens of Agalmatolite.

To the Secretary of the Asiatic Society of Calcutta.

DEAR SIR,—I have the pleasure to forward by this day's Dawk Bhanghy, a small package to your address, containing three specimens which appear to me to answer the description given in "Jameson's Manual of Mineralogy" of Agalmatolite, or Figure stone.

The two smallest pieces I polished myself by rubbing them on a broad file. I have not yet visited the spot where it is to be found, but am told that it can be obtained in large quantities, and from all accounts, slates of considerable size might be gained by skilful workmen, adapted for chimney pieces, tops of teapots, &c. &c.

As my duty will probably take me in the direction where the stone is found, I shall endeavor in the cold season, to proceed to the spot and examine it myself. I shall feel much obliged if you would inform me whether this may be considered a discovery of any value, and if you let me know on what points, and regarding what minerals, &c. you would wish to have information, I shall at all times have much pleasure in forwarding any I may obtain.

I am, Dear Sir,

Yours very faithfully,

R. OUSELEY.

In reply to which I wrote as follows :—

MY DEAR SIR,—Your specimens duly arrived, and I am glad to say are as you supposed Agamatolite; the light greenish-white kind is probably the most valuable, but we should have some good slabs and blocks sent down to ascertain their value in China, where some of the kinds, and of the varieties of Jade (Axe-stone often found near these rocks,) are highly prized. You may have seen in the papers that they are shipping the New Zealand kind, which is like transparent green marble, to China. Carriage is the great obstacle I fear from your quarter, but however, you may be able to find out a cheap road. Kindly give us early information as to localities, &c and as the rock has an evident tendency to scam and split in rhomboidal fragments, any approaching to crystals would be a great prize if you can find them.

Your best specimen of lead and antimony ore contains a mere trace of silver, but in my report which has gone in to Government, I have urged the importance of sending a practical man to the spot. The report is now printing, and I will send you a slip as soon as I get one.

Yours very faithfully,

22nd August, 1843.

(Signed) H. PIDDINGTON.

From the Superintending Engineer, S. E. Provinces, Major Fitzgerald, B. E. we have received a box containing the various specimens of Tin alluded to in Capt. Tremenhoe's report of his visit to the Pakelhan river, which with the former one, will thus be available in the Museum for the inspection of those who may interest themselves in these matters.

Geological and Mineralogical Department.

Observing in a paper published by Brigadier Twemlow in the Journal, No. 135, p. 229, mention made of "indurated clay with fossils" near Ellichpoor, I wrote to him, requesting the favour of specimens. He has sent us one which is of much interest, a hornstone porphyry with imbedded casts of shells from thence, and he promises others as soon as he can obtain them.

MY DEAR SIR,—I have the pleasure to acknowledge the receipt of your polite letter of the 12th instant; it will give me much pleasure if I can be of any use to the Society, and in attention to your request, I forward immediately a specimen of the fossil shells alluded to in note E of my communication of date 30th August, 1841, to the address of the Secretary, of the Agricultural and Horticultural Society. I shall be glad if you would at your leisure inform me what the matrix is, and the name of the larger shell if it can be made out. I found the specimen* in the bed of a nullah at the south base of the range of hills about six miles N. N. E. of this cantonment; I will search for the site whence it was washed

I am, Dear Sir,

Yours truly,

Ellichpoor, July 29, 1843

GEORGE TWEMLOW.

As the consideration of my note on the advantage and utility of deputed a qualified person to examine the new Volcanic Island in the neighbourhood of Ramree, and the site from whence the copper ore was obtained, has formed a special matter of discussion, I do not further allude to it here, as it will be found in the Proceedings.

H. PIDDINGTON.

* With others having the appearance of wood outside, as in the small specimen sent herewith. This is a fragment of fossil bone.—H. P.

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